Public Sector Knowledge Management: Alignment of the Policy Framework to the Departmental Knowledge Purpose, Processes and Context

By

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DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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OPSOMMING

Die tesis argumenteer vir 'n gebeurlikheidsbenadering om die belyning van kennisbestuursraamwerke in die openbare sektor met onderskeie regeringsdepartemente se kennisdoelwitte, prosesse en kontekse te verbeter. Die tesis is spesifiek gefokus op die aanvaarding en implementering van kennisbestuur in die Suid-Afrikaanse staatsdiens.

Die studie gebruik Newell, et al. (2009) se teoretiese raamwerk oor belyning in kennisbestuur en Cruywagen, et al. (2008a, 2010b) se gebeurlikheidsraamwerk as basis vir die evaluering van die Suid-Afrikaanse regering se DPSA KM-strategie.

Dit word gedoen deur Newell se argument oor die dimensies van kenniswerk uiteen te sit, waarna die toepaslikheid daarvan vir die staatsdienssektor beskryf word en die bruikbaarheid daarvan aantoon deur twee Suid-Afrikaanse regeringsdepartemente te beskryf in terme van hul KM-belyning. Daarna word die Suid-Afrikaanse regering se konsep DPSA KM-strategie raamwerk beskryf en geïnterpreteer om aan te toon dat dit 'n universele benadering tot kennisbestuur onderskryf. 'n Vergelyking met drie internasionale kennisbestuursraamwerke toon dat ander lande (in hierdie geval die VSA, die VK en Kanada) 'n gebeurlikheidsbenadering volg waar regeringsdepartemente hulle eie kennisbestuursraamwerke opstel in ooreenstemming met hulle unieke en kenmerkende eienskappe.

Laastens word aanbevelings aan die Departement van Staatsdiens en Administrasie gedoen om die implementering en institusionering van kennisbestuur in die Suid-Afrikaanse openbare sektor organisasies te verbeter gebaseer op 'n gebeurlikheidsbenadering wat beter belyning kan bring tussen kennisdoelwitte, prosesse en kontekse.

SUMMARY

The thesis advocates a contingency approach for the alignment of knowledge management frameworks in the public sector to the knowledge purpose, processes and context of respective government departments. The thesis is specifically focused on the adoption and implementation of knowledge management in the South African public service.

The study uses Newell, et al.'s (2009) theoretical framework about alignment in knowledge management and Cruywagen, et al.'s (2008a, 2010b) contingency framework as a basis for evaluating the South African government's Draft DPSA KM strategy.

This is done by describing Newell's argument about dimensions of knowledge work, outlining its applicability to the public service sector, and demonstrating its usefulness by describing two South African government departments in terms of their KM alignment. Thereafter, South African government's Draft DPSA KM strategy framework is described and interpreted to show that it subscribes to a universalistic approach to knowledge management. A comparison with three international knowledge management frameworks demonstrates that other countries (in this case the USA, UK and Canada) follow a contingency approach where government departments draft their own knowledge management frameworks in line with their unique and distinctive characteristics.

Finally, recommendations are made to the Department of Public Service and Administration for improving the implementation and institutionalising knowledge management in South African public sector organizations based on a contingency approach that will allow better alignment between knowledge purpose, processes and context.

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LIST OF ABBREVIATIONS AND ACRONYMS

KM	*Knowledge Management*
IM	*Information Management*
NKMSF	*National Knowledge Management Strategy Framework*
NDoD & MV	*National Department of Defence and Military Veterans*
SANDoD	*South African National Department of Defence*
NDoH	*National Department of Health*
DON	*Department of Navy*
CKO	*Chief knowledge Officer*
CIO	*Chief Information Officer*
DON CIO	*Department of Navy Chief Information Officer*
SWOT	*Strength Weaknesses Opportunity Threats*
DPSA	*Department of Public Service and Administration*
WHO	*World Health Organization*
NDP	*National Development Plan*
SECI	*Socialisation Externalization Combination Internalisation*
GITOC	*Government Information Technology Officers Council*
AI	*Artificial Intelligence*
R&D	*Research and development*
SMS	*Senior Management services*
HRM	*Human Resource Management*
OECD	*Organization for Economic Co-operation and Development*
KPMG	*Kleynveld Peat Marwick Goerdeler*
CoP	*Community of Practice*
NRF	*National Research Foundation*
CSIR	*Council for science Industry Research*
APQC	*American Productivity and Quality Center*
IKM	*Institute for Knowledge Management*

Chapter 1: Introduction

1.1. Introduction and background of the study

The pressure of the 21st century and the demand of quality service delivery compelled the public sector to consider the adoption and institutionalisation of knowledge management in the public sector. However, for the last two decades' mainstream KM literature focused on a universalistic approach to knowledge management frameworks, which to a greater extent led to the perception that private sector, KM frameworks are applicable and suitable to all public sector organizations, thus universalistic approach to knowledge management frameworks. The universalistic/generic approach to KM led to an abundance of KM literature on alignment of knowledge management frameworks with a strategic purpose, knowledge processes and enabling context, in line with the adoption and practice of KM in the public sector. Considerable progress has been made in research on the strategic alignment with organizations strategy since there was a call from KM scholars for focused research in this area, however after two decades of empirical research attention on this area, strategic alignment literature remains a consistently significant concern.

1.2. Problem statement

It is widely accepted that KM literature's universalistic/generic approach to KM has led to the treatment of public sector organizations as an undifferentiated whole. This tendency led to the misconstrued views of knowledge management frameworks, which led to drafting of universal KM frameworks for both private and public sector organizations. To this end, the DPSA (government department responsible for establishing uniform norms and standards which support an improved efficiency and effective public service delivery), has since 2003 drafted three national knowledge management, (although all of these frameworks were never approved into government policy) which were aimed to provide and define a standardized way for government departments across the three spheres of government to uniformly implement within the public service of SA.

The study covers two main areas of research thus, the first area contends that when South African government department select/design knowledge management framework they should

consider the selection in line with the relationship between a government department strategic knowledge purpose, knowledge processes, and enabling context. Thus, when South African government departments select knowledge management frameworks/strategy they should consider it, in line with the three key areas/dimensions of knowledge work, thus strategic knowledge purpose, knowledge processes, and enabling context.

The second area of research is the contention that South African governments department should use contingency knowledge management framework (instead of universalistic) depending on the department's distinctive characteristics. The study aims to demonstrate that the pursuit of universal KM framework which is a common feature in public sector knowledge management literature does not always work and present a case for a move to contingent/conditional approach that take into account the organization's distinctive and unique characteristics.

Based on the current knowledge management, strategic management and organization theory literature, it is evident that there's literature gap in the alignment of knowledge management framework with knowledge management processes which strengthens the success of KM in organizations. Therefore, this study seeks to contribute in closing the literature gap and give clear guidelines on the alignment of knowledge management frameworks with strategic knowledge purpose, processes and enabling context. This study used theoretical framework provided by Newell, et al. (2009) thus knowledge purposes, knowledge processes and enabling context to demonstrate that when South African government departments adopt, implement and institutionalise knowledge management they should align the knowledge management framework to the organisation's unique, complex and distinctive characteristics.

The study will use two selected government departments (thus NDoD and MV and NDoH) to demonstrate that South Africa's government departments have different, unique and distinctive characteristics, constitutional mandates, strategic knowledge purpose, knowledge processes and enabling context. Furthermore, the study will use three selected international knowledge management models (thus Inukshuk KM model, US Navy KM model, Health Canada) to demonstrate that in countries like Australia, United Kingdom (UK), United States of America (USA) and Canada, government departments draft their own knowledge management framework when implementing knowledge management, in line with the different, unique and distinctive characteristics of the organization.

1.3. Significance of the study

This research study has theoretical significance and provides guidelines for public sector organizations adoption, implementation and practice of knowledge management. The study intends to contribute to knowledge management literature base, much of knowledge management literature focuses on the pursuit of a universalistic approach to knowledge management framework. As a result, this study intends to add literature on how public sector organizations select/design KM frameworks. Furthermore, it intends to serve as one of the sources of guidance on what should be avoided in the adoption, implementation, and practice of knowledge management in the public sector, which will ultimately reduce the high failure rate of knowledge management.

1.4. Research method

This research study primarily used a qualitative documentary research method. This research method constitutes the vehicle through which the ends of the research study will be achieved. Documents selected for analysis were those deemed relevant in providing the quality of data and information which will assist in the realization of the objectives of the study. Scott, (1990) quality control criteria (credibility, representativeness and meaning) will be used to examine if the selected documents meet the requirements and will deliver credible results. Furthermore, the study will use Ahmed (2010) quality enhancing approaches (data reduction, data display and drawing and verifying) to analyse the collected data/information.

1.5. Theoretical background

Newell, et al. (2009) used Cook and Brown literature to distinguish between an epistemology of possession and practice and its application to knowledge dimensions and knowledge management. Newell, et al. (2009) theoretical framework used to demonstrates that when adopting and implementing knowledge management in an organization; knowledge management framework should be aligned with the organization's strategic knowledge purpose, knowledge processes and enabling context. Cruywagen, et al. (2008a, 2010b) provides a holistic view on universalistic and contingency/conditional approach on the selection of knowledge management framework; which challenges the pursuit of universalistic

KM framework, which is a common feature in KM literature. Furthermore, she presents a case for a move to contingent/conditional approach that take into account the organizational contexts, diversity, knowledge purpose, processes and context.

Furthermore, the study uses the draft DPSA KM framework to demonstrate that the DPSA subscribe to universal knowledge management framework. Additionally, the study uses three international knowledge management models (Inukshuk: A Canadian knowledge management model, DON Navy KM model and Health Canada) to demonstrate that in other countries such United Sates of America, Canada, Australia and others; government departments draft their own KM frameworks when adopting and implementing KM programs in line with their organization's unique complex and distinctive characteristics.

1.6. The practice of knowledge management in the public sector

The public sector has been managing knowledge all the time in their daily work for their strategic planning, stakeholder management and consultation, and policy formulation and implementation. Thus strategy, planning, consultation and implementation, (OECD, 2001) but it's not as formalised as knowledge management is supposed to be. Evidence from knowledge management literature suggests that the public sector is not in equal footing/path in comparison with the private sector. However, it is widely accepted that public sector has recognised that significance and importance of knowledge management, high volumes of adoption of KM suggests that the public sector recognises competitive advantage (provisioning of quality service delivery) in the administration of public service. Public sector has grasped the significance of KM to policy formulation and implementation and delivery of service to the public/masses and some of the public sector organizations are in an advanced stage in putting knowledge on the agenda. Although, there is an obvious appetite and governments endorsement of KM, it must be emphasized that implementation of knowledge management has so far proved to be a difficult task, which explains the high failure rate of KM initiatives particularly in the private sector (Cong & Pandya, 2003).

There are many aspects that impact how knowledge is managed in organizations, especially the public sector. Knowledge management literature suggests that knowledge management offer the public sector organizations a great potential to strengthen its effectiveness and

competitiveness in today's knowledge based economy. In order to face the challenges of the 21st century public sector organizations must adapt, take a leading role for their future and starts develop their own suitable knowledge management frameworks and plans which will help them to implement suitable public sector organizations knowledge management. An insignificant percentage of KM literature like (McAdam & O'Dell, 2000); (Wigg, 2002); (Syed-Ikhsan & Rowland, 2004); (Cong & Pandya, 2003); (Taylor & Wright, 2004); (McNabb, 2006); has provided a substantial amount of KM literature on issues and difficulties of implementing and practice knowledge management in the public sector.

1.7. Knowledge management in the South African government departments

The South African public sector in particular national government are responsible for doing the work of government and account to the constitution of the republic and parliament. They implement responsible for first and foremost service delivery guided by the laws and policies conscripted by parliament. This study focuses on the advent of KM in the South African public sector and summaries the journey which DPSA took with regards to the adoption, implementation and practice of KM. Two government departments, thus NDoD & MV and NDoH were selected to demonstrate that although government department are deemed to be similar in structure and functions, they are in fact different, dynamic, complex, and unique with distinctive organizational characteristics. These departments were used to demonstrate that when adopting and implementing KM, each department will require its own knowledge management framework which should be aligned to its knowledge management purpose, knowledge processes and enabling context which must be drawn/drafted in line with its complex and distinctive organizational characteristics

1.8. Research limitations

This research study employed qualitative research technique documentary research method. As social research literature put it, the outcomes of qualitative research cannot be easily explained with excessive amount of conviction, and due to its complexity it is demanding to conclude the extent of the researcher's biasness. Despite the widely accepted limitations of qualitative method, it must be put on record that the guidelines stated in the research methodology section

were followed and scrutinized to the letter in order to ensure that the research outcomes/findings are authentic, reliable, and valid.

The study used two South African government departments, which arguably can described as small in number taking into consideration that South African public sector consists of 35 government departments, but the two departments used are deemed to reflect the true reflection of how unique, complex and distinctive the departments are. Furthermore, the study opted to use the two departments, due to time constrains, scope of the study, and the amount of documents to process and analyse, were contributing factors to the choice of using only two departments. Preferably, the study would have appreciated an opportunity to use a significant number of government departments in order to get a broader perspective, on the South African government's adoption, implementation and institutionalisation of KM. However, this short coming gives other KM researchers an ample opportunity for further research in this area, using a significant number of government departments.

1.9. Thesis layout

The layout of this research study will be outlined and presented in seven chapters, on which a small description of the chapters is outlined below.

Chapter 1: Introduction and background

The purpose of this chapter is to introduce the study and lay a background of the study by outlining the problem statement; research methodology; significance of the study, theoretical framework of the study; the practice of KM in the public sector; and the practice of KM in the South African government departments; research limitations and thesis layout.

Chapter 2: Research Methodology

The aim of this chapter is to outline the preferred research methodology and demonstrate how it was used to arrive to the outcomes/findings of the study. Thus, outlining research design, instruments used to collect research data, quality control criteria and data analysis.

Chapter 3: Theoretical framework

The theoretical framework of this study is divided into three parts thus; the first part used Cook and Brown literature to distinguish between an epistemology of possession and practice and its application to knowledge dimensions and knowledge management. The second part of theoretical framework concentrates on the alignment of knowledge management framework with organization's knowledge purpose, processes and context, using a theoretical framework provided by Newell, et al., (2009). And the last part use Cruywagen, et al. (2008a, 2010b) to challenge the pursuit of universal KM framework in public sector organizations.

Chapter 4: Public sector knowledge management models

Use the draft DPSA KM framework to demonstrate that the DPSA subscribe to universal knowledge management framework and use three international knowledge management models (Inukshuk: A Canadian KM model, DON Navy KM model and Health Canada) to demonstrate that in other countries such as USA, Canada, Australia and others; government departments draft their own KM frameworks when adopting and implementing KM programs in line with distinctive, unique and complex characteristics of the organization.

Chapter 5: Knowledge management in the public sector

The emphasis of chapter is on public sector knowledge management focusing on practice and implementation of KM in the South African on the public sector. Furthermore, the chapter use two South African government departments (NDoD & MV and NDoH) to demonstrate the unique and distinctive characteristics of the departments.

Chapter 6: Analysis and discussion of findings

The chapter focuses on data analysis, interpretation of collected data and findings of the study.

Chapter 7: Findings and recommendations

The chapter provide summarises the analysis, discussion of the findings of the study, and recommend further research to fellow KM scholars and practitioners.

Chapter 2: Research method

2.1. Introduction

Documentary research method is used as a primary method to achieve the objectives of this study. The purpose of this chapter is to presents a rationale for using documentary research methods to evaluate the suitability of the draft KM framework in the South African public sector. The method employed for this research is outlined in this chapter, with a view to persuading fellow researchers and readers to get a preview of not only the research design, but also as the method preferred in this research study.

2.2. Method of data/information collection

Documents that were deemed relevant in providing the quality of data/information, that is necessary and at the core of the realization of the research's objectives, were selected. The documents were supplemented with a comprehensive and extensive range of other literature resources. These sources of data consisted of the DPSA's documents and transcripts on the adoption, implementation and institutionalisation of knowledge management in South African public sector thus, government department publications like policy documents, acts, white papers, constitution of the republic of South Africa, annual reports, government gazettes, annual performance strategic plans, South African yearbooks; South African Health reviews; South African Defence reviews, etc. Furthermore, the resources of information used in this study include among others books, journal articles, print media (newspapers and magazines articles), the internet and World Wide Web (WWW), corporate studies, and other academic writings.

The core sources and resources of data/information were classified as follows:

2.3.1. Practice of knowledge management in the public sector

- Cong, X. & Pandya, K., 2003. Issues of knowledge management in the public sector
- McNabb, D. E., 2006. Knowledge management in the public sector: a blueprint for innovation in government

- Mphahlele, M. Y., 2010. Knowledge management practices in the South African public sector 2002-2008.
- Munzhelele, Tshililo. 2012. Knowledge Management and Service Delivery a Knowledge Management Model for the Housing Sector.
- Taylor, W. A. & Wright, G. H., 2004. Organizational readiness for successful knowledge sharing: challenges for public sector managers.
- Wigg, K., 2002. Knowledge management in the public administration.

These resources of information were used to source KM literature which was used to lay the foundation of this research study and critically analyse the practice of knowledge management in the public sector. The study considered it appropriate and fitting to use the selected documents for the course of facilitating access that the pre-existing (earlier) documents provided, to scrutinise and inspect the practice of knowledge management in the South African public sector. The choice of selected documents, in effect amounted to selecting what this study measured to be credible writers on the practice of knowledge management in the public sector. Their informed ideas and the theoretical foundations of the positions that they took on a variety of aspects of this topic, were bound to be instructive. To analyse these documents, the study used reduction and analysis processes and applied the method of historians investigate the history and practice of knowledge management in the public sector. There was no better technique to examine the past, without specific to what Mogalakwe, (2006, p.203) categorised as “its material traces”, which in this study means, documents which gave an account of what happened in the past.

2.3.2. The scope of DPSA KM frameworks (and its enabling legislations) and selected international public sector KM frameworks

- DPSA. 2003. Draft Learning and Knowledge Manage Management Framework
- DPSA. 2011. Draft National Knowledge Management Framework
- DPSA. 2016. Draft national KM strategy framework: a public service guide
- National Development Plan (NDP) Vision 2030
- The Constitution of the Republic of South Africa (1996)
- The Public Service Act (1994)

These sources of data were used to scrutinize the implementation of knowledge management in the South African government departments. It is important to note that the three draft KM frameworks were all not approved to official transcripts of the South African government departments while the other three documents were supporting documents to the adoption and implementation of knowledge management in the South African public sector.

2.3.3. International knowledge management framework

- Health Canada. 1998. Vision and Strategy for Knowledge Management and IM/IT for Health Canada.
- Girrard, J.P., 2005. The Inukshuk: A Canadian Knowledge Management model
- Department of Navy. 2005. Department of the Navy: Department of the Navy Knowledge Management Strategy

These sources of data (thus, official policy documents from respective international government departments) were used to analyse and demonstrate how government departments in countries like USA and Canada develop/design their own knowledge management frameworks in line with the organization's unique, complex and distinctive characteristics

2.3.4. Exploring use contingency KM framework versus universalistic/generic KM approach in KM literature

- Franken & Braganza, A., 2006. Organizational forms and knowledge management: one size fits.
- Cruywagen, Marié. 2010. Knowledge-centric capabilities: A configurational approach.
- Cruywagen, M., J, S. & Gevers, W., 2008. One size fits all: Towards a topology of knowledge centric organization.
- Miles, et al. 1978. Organizational strategy, structure, and process

These resources were used as sources of knowledge management literature used to examine the suitability and applicability of contingency versus universalistic KM approach in the South African government department, and the public sector at large.

2.4. Quality control criteria of the selected documents

The selected sources and resources of data/information were subjected to Scott, (1990) quality control criteria, to examine if they meet the requirements and ultimately test the research areas of the study.

2.4.1. Credibility

According to quality control measures of documentary sources, the existence of mistakes and deliberate falsifications of information in the documents, which could mislead the reader, had to be established.

The integrity/honesty of authors was examined to test and establish the credibility of the contents of documents sources under consideration. The academic institutions, at which the authors have had long careers, could not be faulted; therefore this study had no good motivation to believe that the authors' integrity could be questioned.

2.4.2. Representativeness

Selected documents were representative of knowledge management, the alignment of knowledge purpose, processes and enabling context, contingency theory, and the knowledge management framework of the South African public sector. Recognizing the impact of bureaucratic considerations on published official governmental documents, these were compared with other sources such as journal articles that either validated or critique the content of such publications.

Most importantly all the non-governmental documentary sources used, were academic discourses, complete with correct citations, and bibliographies. Secondly most of them consisted of journal articles, with some in book form, and all of them adopted a scientific approach in presenting their cases, and points of view; and they were clearly research based documents. with regard to Republic of South African's constitution and relevant KM enabling legislations and the three drafts DPSA KM frameworks, the presentation and the criteria was that of state publications.

2.4.3. Meaning

The fourth criterion is meaning simply put the documents to be reviewed have to be comprehensible. Meaning was included in Scott's set of criteria, to ensure that the messages of the texts were not only clear and unambiguous but also comprehensible, whether written in a simple, or a complicated linguistic style. It also sought to ascertain that there were no contradictions in issues being argued in one source. That is, even if some contradictions between constructions of meaning in one text were initially notable, they later proved to be convergent.

None of the above was notable in all the documents which were used. The journal articles and academic books were written by accomplished academics after all. There was very little chance that they would not conform to academic writing conventions. On the other hand, the Constitution is highly all over the world as one of the best well-drafted constitutions in the world. Public documents were drafted in the democratic era in South Africa for the consumption of the public, notably public documents are written in simple language, and are reasonably comprehensible. Most importantly, the economy of means to an end never ranks low when humans engage in operations of whatever kind. Documentary research methods certainly economize, that it, they are cost-effective. Furthermore, documentary methods also save time, particularly where the correct quantity and quality of relevant documentary sources of data were readily available

Furthermore, quality enhancing approaches to analysing documentary research data have been suggested by advocates of the method, such as data reduction, data display, the drawing, and the verifying of conclusions from the data (Ahmed, 2010).

2.5. Data reduction and analysis

Handling the data inescapably had to be through a comprehensive reading of the texts, data reduction, and an involved interpretation and meaning of the texts, and interpreting meaning in the context of the texts, even in situations which otherwise contain ambiguity. Data analysis consists of the three processes thus, data reduction, data display, and drawings and verifications conclusions.

2.5.1. Data reduction

All the selected core documents were read closely, and important information picked up meticulously, with a view of summarizing what the authors intended to say, which supported the research areas of this study. In this way notes were produced, through the process of data reduction, a summary of each text's important and relevant messages for analysis. This is the phase of the analysis process, which denotes where all social researchers are conventionally in, when they begin to analyse their written versions of their participant-generated data, in most cases through the popular big three research methods. Therefore, data analysis approaches within each of the two sets of methods under discussion, inevitably converge from this point.

2.5.2. Data display

In this stage of the analysis, data representation is done, through displays be it in the form of, graphs, or otherwise and bring out patterns and themes, and whatever is arresting the attention of the analyst about the data. However, textual representations are conventionally the most popular for qualitative data. With regard to the alignment of knowledge purpose, processes and context, themes considered most crucial for the purposes of responding to the questions of the research study, related to distinctive unique complex and characteristics of public sector organizations (in particular South Africa government department), knowledge processes (knowledge creation, knowledge sharing, knowledge codifying and knowledge integration) and enabling context. Themes identified for exploration included the application of knowledge from an epistemology of possession and epistemology of practice perspective, universal against best fit knowledge management framework, public sector knowledge management frameworks, South African public sector organizations and the adoption and implementation of knowledge management.

2.5.3. Drawing and verifying conclusions

The analysis of the patterns and themes extracted from each text, as indicated above certainly made it possible for some conclusions to be drawn, and whence some plausible answers to the questions of the research study. All the steps of data reduction, data display, drawing and verifying conclusions can happen concurrently. For tentative conclusions to shape in the early

stages, while the themes and patterns displayed in the data display stage, it could as well be already in the analysts' mind in data reduction activities. Coding and memoing have a tendency to compel analysts to record and display information as they plod along unravelling data in all stages of the analysis. Memoing as used in this study entails the writing of notes "by the researcher to record and develop ideas related to coding and analysis" (Braun & Clarke, 2013, p. 332). All of the above, this study undertook naturally, minding all the time, the themes and patterns as outlined above. This was especially applicable in the close reading of the public sector knowledge management frameworks particularly the Draft DPSA KM strategy framework (2016), the national development plan (NDP), as well as other relevant documents.

Chapter 3: Theoretical Framework

3.1. Introduction

The theoretical framework of this study is divided into three parts thus, Newell, et al. (2009) used Cook and Brown literature to distinguish between epistemology of possession and practice and its application to knowledge dimensions and knowledge management; the alignment of knowledge management framework with the organisation's knowledge purpose, processes and context; and contingency and universal knowledge management framework. The first part of the theoretical framework will concentrate on exploring and examining the concept of knowledge. Thereafter, different perspectives on knowledge will be specified according to an epistemology of possession and epistemology of practice. This will be followed by an examination on knowledge management according to both these perspectives.

The second part of theoretical framework will concentrate on the alignment of knowledge management framework with organization's knowledge purpose, processes and context. The study use Newell, et al. (2009) theoretical framework, to demonstrates that when adopting and implementing knowledge management in an organization the selection of knowledge management framework should be aligned with to the three dimensions of knowledge work thus knowledge purpose/content, knowledge processes and enabling context, and the organization's unique, complex and distinctive characteristics of the organization.

The last portion of the theoretical framework use Cruywagen, et al. (2008a, 2010b) literature to challenge the pursuit of a universalistic approach (known as best practice and one size fits all) to the selection KM framework, which is a common feature in KM literature and present a case for a move to contingent/conditional approach that take into account the organization's unique, complex and distinctive characteristics and knowledge purpose, processes and context.

3.2. Perspectives on knowledge and Knowledge Management

According to KM literature, the concept of knowledge is multidimensional, complex, complicated, and multifaceted; and it has over the years been a subject of debates, particularly since the don of KM. The study tackles both main epistemology of possession and

epistemology practice (Cook and Brown 1999). These two perspective of knowledge triggered debate from KM scholars from different schools of thought. However, it must be emphasized that this study applied epistemology of practice perspective to analyse and examine literature, theories (and its related concepts) used in the entire study.

3.2.1. Epistemology of possession

Epistemology of possession approach treats knowledge as an organizational resource (like land, capital) which is possessed in the heads of employees that could be unearthed, stored in databases and distributed throughout the organization. Newell, et al. (2009, p.3) stated that "knowledge according to an epistemology of possession is seen as personal property to the individual knower who is able confer meaning on data and information by drawing from his or her own subjective experiences and previous understandings". This description of knowledge fell short to describing it as an entity of stock or resource which can be leveraged, extracted, codified and made widely available and used to improve efficiency and effectiveness in an organization. There are numerous scholars who subscribe to an epistemology of possession (such as Nonaka and Takeuchi, 1995, Kogut and Zander, 1992; Zack, 1999 Alavi and Leidner, 2001), from their perception knowledge is perceived as either tacit or explicit, they focus on processes in which tacit knowledge is converted to explicit, structured and shared throughout the organization.

Polanyi (1966) is one of the earliest scholars to differentiate between tacit and explicit knowledge, tacit knowledge is classified as being rooted in action and involvement in context. This kind of knowledge cannot be easily transferred from one person to the other, because it is context specific and located (skills, intuition, expertise). Thus, it is understood to be personal and linked to action and meaningful behaviour. Polanyi (1966, p. 4) refers to this as "we know more than we can tell". Whereas, explicit or codified knowledge is knowledge which can be easily articulated in formal and documented whereas tacit knowledge is harder to formalize into explicit modes and more difficult to communicate and share. Further he explains that tacit and explicit knowledge are not totally distinguishable since tacit knowledge is a required element for both (explicit and tacit) knowledge. In contrast, a purely taxonomic perspective treats knowledge as distinct elements. KM scholars and gurus challenged a purely taxonomic perspective and argue that an integrated perspective which considers tacit and explicit

knowledge as mutually constituted (Tsoukas 1996). Although, notable Nonaka (1994) draws upon Polanyi's work, he categorized tacit and explicit knowledge as distinctive components.

The epistemology of possession provided several useful knowledge frameworks which are deemed necessary to breakdown and understand the complexities of knowledge but to the scope of this study and time, only three frameworks will be considered thus, Nonaka and Takeuchi (1994), Spender, (1996), and Blackler, (1995). According to Nonaka and Takeuchi (1994) framework, knowledge creation is a spiralling process of interactions between tacit and explicit knowledge. The interactions between the tacit and explicit knowledge lead to the creation of new knowledge. Nonaka and Takeuchi acknowledged Polanyi's work as their source for the concept of tacit knowledge and have developed its more practical side. In this context, Nonaka and Takeuchi proposed that tacit knowledge also includes cognitive skills such as beliefs, intuition and mental models as well as technical skills such as know-how. It is important to relate tacit knowledge to Nonaka and Takeuchi's SECI model of knowledge creation because the model places tacit knowledge at its heart and suggests that organizations have to find ways of communicating and capturing tacit knowledge. The SECI model is the interplay of four knowledge processes, namely, socialization (tacit/tacit), externalization (tacit/explicit), combination (explicit/explicit) and internalization (explicit/tacit) in converting tacit knowledge to explicit knowledge and vice versa.

The SECI model was modified by Nonaka and Konno (1998) to highlight the importance of providing the necessary enabling context for employees to create and share knowledge. Nonaka and Kanno (1998) developed the concept of *ba* which was originally developed by Kitaro Nishida (1970), they described *ba* as a shared space for emerging relationships. Thus, physical (shared office or building) virtual (telephone or video conference) mental (shared experience and values) or a combination of those, for knowledge creation. They further identified four kinds of *ba* which they incorporated into the four kinds of knowledge conversion processes. Thus, originating *ba*, it's a place in which individuals develop empathy, share feelings, emotions, experiences etc., this is socialisation which relies on face-to-face interaction and is regarded as a starting point of knowledge creation. Interacting *ba*, it's a place in which peers meet and engage in dialogue, debates and reflects on common topics, this is aligned to externalisation. Cyber *ba*, it's a virtual place where new knowledge can be combined with existing information and be made available to the organization as a whole. It is enabled by ICT

and is essential to combination. Lastly, exercising *ba*, it's a place where formal explicit knowledge can be applied through practical job training and active participation.

Whereas Blackler, (1995) framework categorizes knowledge into encoded, embrained, embodied, encultured, and embedded elements. Blackler's types of knowledge can be thought of in terms of spanning a continuum of tacit through (explicit) and encoded being predominantly explicit while embedded, embodied and encultured types of knowledge display varying degrees of both tacit and explicit knowledge. Knowledge is analysed as an active process that is mediated, situated, provisional, pragmatic and contested. Rather than documenting the types of knowledge that capitalism currently demands the approach suggests that attention should be focused on the systems through which people achieve their knowing, on the changes that are occurring within such systems, and on the processes through which new knowledge may be generated. Knowing is facilitated in the sense that it is not independent and objective but revealed in systems of language, technology and associations. It is also situated in specific contexts which are related to time and space. Knowing is provisional because instead of being static, it is constantly being shaped and developed. This framework subscribes to an epistemology of practice; it rejects the traditional philosophies of knowledge as being individual, abstract and disembodied. In addition, it emphasised that for organizations are different as such, different types of knowledge prevail and highlighted the connection between knowledge purpose, processes and context. Notably, Newell, et al. (2009) considered Blackler framework to be useful to knowledge based view of knowledge, because it focuses on the major purpose of the organisation and the kind of knowledge that dominates; processes and enabling context that have to be considered in order to manage knowledge.

While, Spender, (1996) framework focuses on the distinction between individual knowledge and social knowledge, each of which, it has been argued it can either be explicit or implicit and Spender's definition of implicit knowledge arguably resembles Nonaka tacit knowledge. It proposed a classification of knowledge types which combines two dimensions, explicit or tacit knowledge and individual or social levels, to distinguish four types of knowledge which can be identified as individual/explicit (conscious); individual/implicit (automatic); social/explicit (objectified); social/implicit (collective). Conscious knowledge consists of facts, concepts, and frameworks that the individual can store in memory and retrieve more or less at will. Automatic knowledge includes perceptions, mental models, values, behavioural tendencies, and technical skills that are unconscious or semi-conscious and difficult or impossible to access consciously.

Objectified knowledge represents the shared corpus of codified knowledge. Collective knowledge consists of the knowledge that is embedded in the forms of social and organizational practice, residing in the tacit experiences and enactment of the collective. Individual actors may be unconscious of such knowledge even though it is accessible and sustained through their interaction.

This framework states that organizational knowledge creation is as a result of interactions between all the four types of knowledge. Notably this framework argues that collective (social/implicit) knowledge is actually the most valuable to organizations because this is a type of knowledge that other organizations find difficult to understand and imitate. Collective knowledge consists of patterns and modes of knowledge combinations between individuals, groups, units, and organizations. According to Spender (1996), it is this type of knowledge that is strategically most important for the organization. Shared operating methods are inimitable across organizations, and therefore they are the main source of sustained competitive advantage. This framework states that (1996, p.64) argues, "Knowledge is less about truth and reason and more about the practice of intervening knowledgeably and purposefully in the world." And to intervene in the world one has to be able to communicate with others and understand the particular context of activity. In this sense, knowledge exists essentially between and not within individuals.

Nonaka (1994) framework challenges Blackler's (1995) and Spender's (1996) frameworks, which has to a greater extent resulted in uncertainty and a need for more literature on knowledge theory. The aforementioned frameworks come from different schools of thought of knowledge theory, which may obscure the connection between them. Currently, the prevailing idea is the more integrative perspective of Blackler (1995) and Spender (1996) which considers both the individual and the collective (Newell et al., 2009). Although, the integration of encoded knowledge does advance the field as it depicts the idea of knowledge being to a varying degree explicit. Newell, et al. (2009) argues that frameworks provides a guidance to understanding knowledge it has been challenged, since it does not enable the understanding of the subjective and dynamic nature of knowledge. They further stated that these frameworks focus on the differentiation of tacit and explicit knowledge, and view knowledge as a commodity that can be transferred just like other resources.

3.2.2. Epistemology of practice

In contrast, to the epistemology of possession, Swan & Scarborough (2001) and many others recommended epistemology of practice which sees knowledge as an inherently problematic concept, which is fragile, politicized and dialectical, thus being in the making, continuously constructed and deconstructed. Orlikowski, (2002, p. 250) views knowledge as "at any given time, what the practice has made it and sees knowledge as enacted in people's practices. It (this view of knowledge) which leads to understand knowledge and practice as reciprocally constitutive, so that it does not make sense to talk about either knowledge or practice without the other". Whereas Newell, et al. (2009, p.7) defined knowledge "as the ability to discriminate within and across context" thus from an epistemology of practice perspective knowledge is concerned with the ways in which actors in particular social situations understand and make sense of where they are and what they are doing. This definition draws from Tsoukas and Vladimirou (2001) who described knowledge as the individual ability to draw distinctions within a collective domain of action, based on an appreciation of context or theory or both. Newell, et al., (2009) further stated that knowledge is ambiguous (different meanings and interpretations), dynamic (accepted meanings can be changed when actors and contexts changes), included in the body ("know how"- the things you do, e.g. cycling), context dependent (requires a context and could it could be difficult to separate from). Epistemology of practice focus is on how to build and create a supporting context in which different social groups and interests can connect. With different identities and perspectives, it is possible to accomplish specific tasks or purposes. This view on knowledge goes along the lines of the theoretical framework of social constructivism. The practice perspectives on knowledge, or knowing for that matter, have led to a shift towards focusing on knowing, an activity both on the social and organizational level as opposed to 'knowledge' as a tangible object. Viewing knowledge work in the light of this particular theoretical tradition has initiated a shift in "seeing knowledge, or knowing, as a process of 'sensemaking', whereby actors interacting within particular social contexts come to negotiate understandings of the world" (Swan, et al., 2009, p. 14).

Epistemology of practice approach starts from the proposition that knowledge does not reside inside individuals' heads nor is something external to individuals (e.g., embedded in structural routines and rules). Rather, knowledge manifest in and through our practices. The practice

perspective critiques the perspective of knowledge as a resource/commodity and challenges the contention that it can be codified, stored, and transmitted between people. It states that knowledge is not a commodity, nor scientific discoveries rather it is in practice and as practice. In order to elaborate on the practice-based nature of knowledge, Brown and Duguid (1998) highlighted the difference between "know-how" and "know-what". And stated that know-what is to a significant degree something people carry around in their head and pass between each other. Whereas know-how embraces the ability to put knows-what into practice. Know-how is revealed in practice and created out of practice. It is, to a great extent, the product of experience and the tacit insights experience. They go further to posit that know-how is held by work group rather than individuals because most work is of a collective nature. Cook and Brown (1999) argue for a perspective that focuses on the knowledgeability of action; that is on knowing (a verb meaning action, doing, practice) rather than knowledge (a noun connoting thing, elements, facts, and processes). Knowledge, in this view, is a tool at the service of knowing. With the argument that knowledge and practice are reciprocally constitutive, Orlikowski (2002) develops the notion of organizational knowing as a substitution for the notion of organizational knowledge. The author states that organizational knowing emerges from the ongoing and situated actions of organizational members as they engage in the world.

In closing this section, the possession of practice approach ensures that tacit knowledge component of work is examined and from this perspective knowledge can only be understood when related to the context within which it was generated. (Orlikowski, 2002, p. 253) stated that knowing how to perform practices "emerge from the situated and ongoing interrelationships of context (time and place), activity stream, agency (intentions, actions), and structure (normative, authoritative, interpretive)", putting more emphasis on the human element (social interactions) in knowledge dynamics.

3.2.3. Comparisons between an epistemology of possession and an epistemology of practice

Perspective	Epistemology of possession	Epistemology of practice
View of knowledge	Knowledge as a cognitive entity, a resource to be accumulated, captured and transferred	Knowing as practice that is constituted by and constituting fields of interconnected practices.
Where	Within the skills and the heads of individuals and organisations	Within social contexts and embodied in practice
Major locus of knowledge	Embrained and embodied in the skills and heads of individuals/organizations	Embedded, embodied and invested in practice
Major focus of KM	Capturing/transferring knowledge using ICT	Transform practice and traversing boundaries of practice using objects and creating communities of practice
Relation to organisational performance	Immediately aligned to the function and performance	As a relationship which is between knowledge and performance that is socially and politically meditated. Reflecting what powerful groups find interesting
Main focus for managing knowledge work	To capture, convert, and transfer. Converting from different types (tacit/ explicit)	To share, translate, and legitimize knowledge among groups which are interacting
Major task of Knowledge Management	Capturing and transferring knowledge by using IT and other explicit tools	Translate knowledge across interacting groups. Focus on building trust, social networks and communities of practice
Major focus for knowledge work	Transfer/convert knowledge from one type (thus tacit to explicit) or location (individual organization) to another	Transform knowledge through overlapping practice

***Table** 1: Comparison of epistemology of possession and epistemology of practice*
***Source**: Adapted from Newell, et al. 2009. Managing knowledge work and innovation*

3.3. Knowledge Management

According to KM literature the choice of approach on knowledge be it an epistemology of possession or epistemology of practice has implications on the selection of KM framework for organizations. In fact, the approach has a profound influence on the tactics, strategies and analytical tools that should be used. If the organisation believes that knowledge is something that is possessed, then the major challenge for the KM system is to free knowledge from the individual and make it to a widely available organisational resource by example capturing and transferring this knowledge into an IT-system or writing it down as explicit guidelines. But if the organisation believes that knowledge is something that is shared through practice, and then the main challenge becomes to provide an enabling context in where people are able to do things differently and by that learn and develop new knowledge.

3.3.1. Knowledge Management according to an epistemology of possession

KM literature, posits that most of mainstream KM assumes the epistemology of possession, and it has therefore been centred on identifying, extracting and capturing knowledge from employees to make it, a valuable resource to be shared by the entire organisation. A good example which has been cited example describing knowledge as an asset is Davenport, (1994) thus, "KM is the process of capturing, distributing, and effectively using knowledge." Another author, who adhered to this point of view, is Nonaka (1998) by defining knowledge as "justified true belief" (Nonaka et al., 2000, p. 7), they believe that "the central activity of the knowledge creating company" is to "make personal knowledge available to others" (Nonaka, 1998, p. 26).

For some KM scholars and researchers' described knowledge as some kind of valuable asset/asset which organizations can be converted into competitive advantage thus, intellectual assets (Snowden, 2002), intangible assets (Sveiby, 1997), and knowledge assets (Wiig, 1997). The aforementioned authors arguably treat KM as the management of assets and to a certain extent treat knowledge as something people have in their minds and that can be developed, applied and used to improve effectiveness in the organisation. There are still some other researchers who confuse information management with knowledge management. This confusion between information management and knowledge management (or to a greater extent knowledge as possession perspective) has led to many organisations investing valuable money and time on building sophisticated ICT infrastructure which was expected to bring competitive advantage.

3.3.2. Knowledge Management according to an epistemology of practice

According to this perspective, knowledge is created and embedded in culture and by people spending time together and do things in interactions (Newell, et al., 2009). The epistemology of practice therefore stresses the importance for organisations to have processes and enable contexts that support knowledge work. Focus should lie on connecting different social groups and interests, identities and perspectives to work together in order to accomplish specific tasks or purposes. From the practice perspective Tsoukas and Vladimirou (2001, p.990) argue that "KM is primarily the dynamic process of turning an unreflected practice into a reflective one by elucidating the rules guiding the activities of the practice, by helping give a particular share

to collective understandings, and by facilitating the emergence of heuristic knowledge". This relates to the practice perspective by stressing the importance of action and social practice. Furthermore, Tsoukas and Vladimirou, (2001) states that managing knowledge does not necessarily mean the management of information in its actual meaning but more about suggest sustaining and strengthening social engagements and practices.

Hislop, (2009, p.59) definition of KM is found to be the most comprehensive and suitable for this study, it is current and comprehensive and it defines KM from practice base perspective thus, KM "is an umbrella term which refers to any deliberate efforts to manage the knowledge of an organization's workforce, which can be achieved via a wide range of methods including directly, through the use of particular types of ICT, or more indirectly through the management of social processes, the structuring of organizations in particular ways or via the use of a particular culture and people management practices".

Community of practice has been cited as one of the perfect examples of what practice-based perspective on knowledge is all about. According to KM literature, COPs theory comes from a social theory of learning in practice literature, and Lave and it was introduced to KM domain by Lave and Wenger (1991). In its actual sense, communities of practice (CoPs) are voluntary, flexible networks of professionals/employees who share common research interests in a specific area of research/work, and who come together on a regular (or when their schedules allow) or ad hoc basis to engage, debate and share and build their knowledge on their specific of common interests. The community of practice fulfils various functions with respect to the creation, sharing, codifying, and integration of knowledge in an organization. It is useful for a number of organisational activities; problem solving (complex academic/research challenges), information requests, seeking experiences and expertise, coordination and synergy, discussing developments, and mapping knowledge and by that identifies knowledge gaps.

3.4. Criterion for the alignment of knowledge purpose, processes and contexts

The study used Newell, et al., (2009) theoretical framework to demonstrate that when implementing knowledge management in an organization, the selection of KM framework should be aligned to three dimensions of knowledge work thus knowledge purpose/content, knowledge processes and enabling context, and distinctive characteristics of an organization.

It forewarns KM practitioners and scholars that KM initiatives in any organization must take into consideration the unique context, and distinctive characteristics of the organization, and consider how this can assist or obstruct the adoption of KM; paying attention to processes which prompt individuals/teams to share (or hoard) knowledge, and the initiative must not lose sight of the purpose and goals of implementing KM in an organization. According to Swan, et al., (1999, p.4) KM frameworks "that are useful for some aspects of KM may be useless, irrelevant or even disruptive for others". Simply put Newell, et al. (2009) theoretical framework will used to demonstrate that public sector organizations comprise unique, complex and distinctive organizational characteristics and when implementing knowledge management, the selection of knowledge management should be aligned to three dimensions of knowledge work thus, knowledge purpose, knowledge processes and enabling context.

3.4.1. Knowledge purposes: knowledge exploration or knowledge exploitation

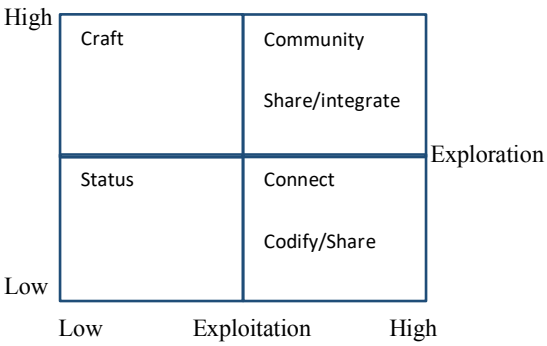


***Table** 2: Purposes and processes involved in managing knowledge*
***Source**: Newell, et al. 2009. Managing knowledge work and innovation)*

According to Newell, et al. (2009, p.231) theoretical framework, the strategic purpose of adopting KM is knowledge exploration, knowledge exploitation or a combination of both (sometimes with more emphasis on one than the other). Simply put organizations which adopt the strategic approach to managing or adopt KM as a source/basis of competitive advantage have one of the two main purposes in mind, namely knowledge exploration and knowledge exploitation or a combination of both. As a result, depending on the chosen strategic knowledge purpose, specific knowledge processes have to be implemented in the organizational level in order to reap the rewards that come with the practice and institutionalisation KM in an organization. KM activities, procedures and techniques have to be introduced with the intention

of creating required enabling context to support and promote the adoption and implementation of suitable knowledge processes.

The terms knowledge exploration and knowledge exploitation were introduced by March (1991, p.71) and according to him exploration is an "experimentation with new alternatives through search, variation, risk taking, experimentation, play, flexibility, discovery, and innovation" whereas exploitation is a "refinement and extension of existing competencies, technologies, and paradigms, which are knowledge-related activities involving refinement, choice, production, efficiency, selection, implementation, and execution". Furthermore, he adds that exploration develops the organization's knowledge base by searching for knowledge distant from its current expertise hence facilitating the acquisition of novel components thus experimenting with new alternatives. Knowledge exploitation take place when an organization searches for solutions in its existing knowledge base hence involving the use or development of things already known thus, refinement and extension and extension of existing competencies. Both knowledge exploration and exploitation involves learning and innovation thus, regardless of whether an organization is involved in exploitation of knowledge through replication, reuse, and improvement of past actions, it learns and accumulates knowledge, although in a more incremental manner compared to exploration of knowledge. Most importantly, the exploration and exploitation of knowledge is subject to relativity since what one organization can identify as an exploratory activity may be considered exploitative by another one.

Moreover, March (1991) added that knowledge exploration and exploitation of knowledge are different and independent to one another; they are, in fact, mutually exclusive. Some even see the two strategies as contradictory and argued that they should not be pursued simultaneously. KM literature on exploration and exploitation advocated for balance, the main reasons cited for advocating for balance of the two it to avoid both failure and success traps, organizations need to employ an ambidextrous learning strategy that balances exploration and exploitation. March and Levinthal (1993, p.105) advocated for a mix between exploitation and exploration activities, they stated that "an organization that engages exclusively in exploration will ordinarily suffer from the fact that it never gains the returns of its knowledge". An organization which exclusively chooses exploitation will ordinarily not yield the same results to an organization which employs both exploration and exploitation. Different units/directorates within an organization may separately adopt exploration or exploitation, for an instance the

legal directorate may use exploitation because most of their duties relies on case law and legislations which are generally amended over a long time while, finance directorate use exploration since the execution of their duties requires continuous innovation (exploration).

There has been debate amongst KM practitioners and scholars in trying to identify different ways to strike the suitable balance between knowledge exploration and exploitation in public sector organizations. There are two approaches of balancing have been identified thus, structural and sequential ambidexterity. Gupta, et al. (2006, p.63), described structural ambidexterity as the "synchronous pursuit of both exploration and exploitation via loosely coupled and differentiated subunits or individuals, each of which specializes in either exploration or exploitation". Public sector organizations at different levels can easily form in-house strategic alliances for exploration. For example, implementation of pilot programs and expansion of them after a successful experiment in the private sector has become common practice in the public sector. Benchmarking is a good example of the structural ambidexterity in the public sector in that exploration is done first, and successful practices spread out to other units within the public sector organization or to other public sector organizations, which is a way to reduce the risk of exploration thus coming up with new initiatives.

Another approach of balancing between knowledge exploration and knowledge exploitation is sequential or temporal ambidexterity. Supporters of this approach argue that structural ambidexterity is not conceivable, because it is difficult for an organization as an integrated system to be structurally ambidextrous. They argue that simultaneity of two mutually exclusive approaches of learning in a single organization would cause tension and high coordination costs. Temporal ambidexterity is arguably more applicable to public sector organizations due to the political leadership changes and climate, which is capable of changing the entire top leadership. Change of top leadership in any form of organisation (public or private sector) brings about changes in policy direction, which may disrupt the direction of strategic knowledge purpose (exploration and exploitation). The challenge of ambidexterity in public sector organizations, depending on the direction of knowledge purpose may cause negative consequences such as managerial eagerness towards innovation (exploration) in the first term of office, and a change of direction in the next term. Therefore, sequential ambidexterity based on political leadership change (or based on politics) will most likely affect the strategic knowledge purpose of the organization, thus a change of preference between exploration/exploitation and complete disregard of the other.

3.4.2. Knowledge processes and enabling context

Important aspects of the enabling context	**Knowledge processes**			
	Knowledge creation	Knowledge integration	Knowledge sharing	Knowledge codification
Self-formed and managed teams	✓			
Time	✓	✓	✓	✓
Diversity	✓	✓		
Strong psychological contract	✓			
Shared identity	✓	✓	✓	
Trust	✓	✓	✓	
Networking	✓	✓	✓	
Boundary objects	✓	✓		
Boundary spanners		✓		
Social capital		✓	✓	
Shared perspective		✓	✓	
Common language			✓	✓
Tangible output				✓

***Table** 3: Important aspects of the enabling context supporting the four major knowledge processes*
***Source**: Newell, et al. 2009. Managing knowledge work and innovation*

KM literature states that there are several classifications of knowledge processes from a number of KM practitioners and gurus. Notably Davenport (2005) classified KM processes into five categories thus finding, creating, packaging, distribution and applying. Ruggles (1998) categorized KM processes as knowledge generation, codification and transfer whereas Skryme (2002) categorises KM processes as knowledge creation, transfer, assembly, integration and exploitation. The existing literature argues that knowledge processes are closely interrelated with one another and overall have an impact on organizational innovation.

For the purposes of this chapter which is to provide the criterion for the selection of KM models by the public sector organizations, Newell, et al. (2009) theoretical framework stated that there are four major knowledge processes, thus knowledge creation, knowledge integration, knowledge sharing, and knowledge codification. The frameworks highlighted the importance of intra and inter organizational contexts which act as an enabler or abstract of knowledge sharing processes and singled out organizational culture, time, and diversity, autonomy, and boundary objects etc. as important enablers of knowledge work. Furthermore, they argued that

in practice different aspects of the enabling factors such as trust and boundary spanning play a greater or lesser role in facilitating knowledge processes.

3.4.2.1. Creating knowledge

Newell, et al. (2009, p.79) defined knowledge creation as "typically the outcome of bringing together types of knowledge together by involving a number of individuals from different professional and disciplinary backgrounds and often from different organizations in a collaborative effort of some kind". Furthermore, they stated that knowledge creation depends on the application of employees' skills and expertise in team work and project scenarios While, Nonaka and Kanno (1998) developed the notion of *ba*, which they described as context, and *ba* was described as a shared space (physical, virtual and mental). They argued that for knowledge creation to occur, context need to be created, since there's no knowledge creation without space; and they described knowledge creation as the generation and regeneration of enabling context, after all enabling context provides the energy, quality and place to perform the individual conversations and more along the knowledge spiral. Knowledge in any organization is created through the interactions amongst individuals or between individuals and their environment.

SECI model is one of the most mentioned and influential theories of organizational knowledge creation. Nonaka and Takeuchi, (1995), in their analysis of knowledge creation, they argued that an organization creates new knowledge through conversion and interaction between tacit and explicit knowledge. Furthermore, they stated that knowledge is both tacit and explicit; and effective knowledge creation depends on enabling context can be physical, virtual, metal etc. Knowledge is dynamic, relational and based on human action; it depends upon the situation and people involved rather than on absolute truth or artefacts.

The role of organization in knowledge creation is to develop the conditions that would enable knowledge creation at the individual, group, organizational or inter-organizational levels. They highlighted knowledge vision, autonomy, fluctuation and creative chaos as key enablers of knowledge creation. Knowledge vision is organizational intention for KM practice; this may be expressed as a knowledge vision which allows the organization to assess the relevance and usefulness of new knowledge. Another condition is to foster individual and group autonomy, encouraging individuals and group to share information and act on their own as far as

circumstances permit. Whereas fluctuation and creative chaos is a deliberate breaking down of hierarchy, red tape, routines, habits or cognitive frameworks to create a chaotic situation. Individuals then have to reconsider their basic perspective and may need to engage in dialogue with people inside and outside the organization.

In line with the contention that knowledge creation requires context, and given the importance of enabling context, Newell, et al. (2009) highlighted important aspects of enabling context which support knowledge creation in a knowledge intensive organization thus, trust, organizational culture, shared identity, boundary spanners, rewards, boundary objects, social capital, etc.

According to Newell, et al. (2009) boundaries are necessary means for facilitating knowledge creation therefore focus should be paid to its enabling rather than obstruction aspects. Furthermore, they argued that boundary spanners are employees who facilitate the exchange of information and knowledge by connecting boundaries; they actually assist to bridge collaboration from specialised fields. Notably, boundary spanners have also been referred to as gatekeepers and coordinators and they play an important role in knowledge sharing and thereby provide a competitive advantage through the facilitation of knowledge exchange. The role of boundary spanners in knowledge creation has been broken down into three core tasks thus, to improve organisational effectiveness by supplying information from external sources (thus competitors or other organizations); demonstration of ideas and perceptions across boundaries to ensure engaged and committed stakeholders and value creation by establishing knowledge exchange between parties.

The concept of organisational learning and knowledge work also ties into the knowledge creation aspects of boundary spanning and the related boundary objects through establishing a connection between the topics a more comprehensive understanding of organisational knowledge flow. The organisational boundaries (in the form of directorates and sub-directorates, and hierarchy) do restrict the knowledge flow as they frame the limits of teams and departments. In order to overcome the barriers hindering the knowledge flow boundary spanners assist by reducing the barriers both internally and externally. Within organisations there is a sub-conscious pressure to limit the novel knowledge creation, which can be mitigated through the integration of a diverse selection of knowledge areas.

Boundary spanners play a key role in the reduction of resistance, such as environmental constrains and organisational policy, through strategic decisions. However, Newell et al., (2009) highlighted that knowledge creation is a core aspect within organisational learning and knowledge work, and therefore boundary spanners have a crucial role to play in this regard. However, there are negative aspects of boundary spanning which have been highlighted by KM literature is the inherent change of knowledge when it is transferred, misrepresentation of information, the vulnerability of centralising the communication and the potential abuse of influence and power.

The concept of boundary objects can either be concrete objects (tools, prototype, documents etc.) or abstract concepts (vision, symbol), their mutual and common characteristic is that they both have interpretative flexibility (people can make sense of them in different ways) which, allows them to provide a common frame of reference and shared identity, and enable interaction and communication between different groups (across boundaries) within an organization. The artefacts serve as an interface by providing a flexible environment containing several understandings, and play a role in helping to promote shared identity, transform knowledge, mobilize action, which leads to knowledge creation. These artefacts assist with bridging the intersecting functions by providing each part with the tool to interact. Crossing boundaries provide an opportunity to learn which supports the notion of improved organisational learning and experience within mixed teams, and it can also be used to bridge collaboration between employees from different fields. Boundary objects can be found embedded in the information infrastructure as they are used by personnel to bridge the barriers when engaging in standardised routines and practices.

According to Mayer, et al. (1995, p.712) cited by Newell, et al. (2009) defined trust as the "willingness to of a party to be vulnerable to the actions of another party based on the expectations that the other party will perform a particular action important to the trust or, irrespective of the ability to monitor or control that other party". KM literature posits that trust is a multi-disciplinary concept which is beneficial to knowledge creation, Lee and Choi (2003) found that the effects of trust is significant in all stages of knowledge creation process which are combination, socialisation, externalization, and internalization (Nonaka, 1994). This demonstrates the very important role which trust play in the process of knowledge creation. Nahapiet and Glohal (1998) highlighted that high level of trust enables the creation of new intellectual capital through a process of combination and exchange. They further distinguished

three elements of how trust leads to the creation of new knowledge. They argued that trust give access to parties for combining and exchanging intellectual capital; it gives options for the anticipation of value by combining and exchanging intellectual; and trust motivates the combination and exchange of intellectual capital.

It is a widely accepted phenomenon that trust can lead to a necessary condition (or enabler) of knowledge creation. Indeed, high levels of trust are considered necessary to facilitate interaction, engagement, debate, and dialogue which leads to sharing of tacit knowledge and generate learning that can lead to knowledge creation. Newell, et al. (2009) stressed that while trust is important for knowledge creation, it is also difficult to establish trust, and individuals will not necessarily grow to trust each other simply because they are part of one team or project. It is important to understand that there are different factors and processes which influence the relationship between trust and knowledge creation. They further stressed that it is difficult to create trust when those involved are from different backgrounds and perspectives. In order to overcome these complexities of trust and knowledge creation, it is important to emphasize in great detail the importance of collaboration and team work.

3.4.2.2. Knowledge integration

Huang & Newell (2003, p. 167) define knowledge integration as "an ongoing collective process of constructing, articulating and redefining shared beliefs through the social interaction of organizational members". While, Tell (2011) studied more or less thirty (30) definitions of the knowledge integration concept with a sole intention of removing the uncertainty defining this concept and indicated that the most widely accepted definition is that which reflects knowledge integration as a mixture of specialized, differentiated knowledge across a multitude of organizational boundaries and environments/fields.

Social capital is one of the key and important enablers of knowledge integration in inter-organizational networks context. According to Bhandar et al. (2006), as cited by Halversson and Lindell, (2014) social Capital "is a resource based on social relationships that inheres in structures such as organizations and organizational networks, while Nahapiet and Ghoshal (1998) and can manifest as trust, norms, cooperation, information benefits and power, Adler and Kwon (2002) and that influences the behaviour of the members".

Simply put social capital a resource that results from social relationships, which are available to employees or to organizational units within an organization. The structural dimension refers to the connections among actors, links, networks, density, and hierarchical structure; the relational dimension describes the types of relationships among people, such as trust, respect, norms for interactions, and personal obligations or expectations; and the cognitive dimension refers to resources from shared representation and interpretation, a common language to facilitate interactions, and the development of common sense making.

As with knowledge creation, knowledge integration is time consuming; it is given that in the beginning there will be different perspectives on the nature of the problem and how to solve it. Therefore, in order for a shared perspective to emerge the team or project needs time to interact either face to face or virtually in order to find a common language/understanding which will eventually lead to a shared perspective. Shared perspective has also been identified by Newell, et al. (2009) as one of the social enablers of knowledge integration. According to literature on knowledge integration, shared perspective exists when employees of an organization have common interests and share similar experiences which can be used in future projects, regardless of whether the experiences were acquired elsewhere (in other organizations), or developed together as a team or individually. Shared perspective for the organisation's work enable employees to understand each other's point of reference and perspective; which helps the team to form precise explanations and expectations about their project/work, which as a result enables smooth collaboration between team members. Shared perspective and vision are thus important for effective integration knowledge. Basically shared perspective facilitates the integration of knowledge by improving the direction and intensity of knowledge flows. Without a shared perspective, individuals are less likely to know what expectations exist on their work, what outcomes to measure, or what models in use are in operation.

Newell, et al. (2009) highlighted common language and boundary spanning as one of the key enablers of knowledge integration. Nonaka and Takeuchi (1995) refers to common knowledge as a common understanding of a specific subject area or discipline (like knowledge management, or sociology) shared by organizational members. While, Grant (1996) posits that common language is a prerequisite for communication between specialists and it can mean anything from speaking the same language to sharing an advanced computer system, such as a CAD system, that provides a common language for specialists across different knowledge areas and companies. Thus, common knowledge involves creating some kind of intersection of the

separate knowledge sets so that separate areas of specialist knowledge can be integrated. Whether communication is successful or proceeding further depends upon commonality of vocabulary, conceptual knowledge, and experience between individual specialists. Moreover, organizational culture and shared behavioural norms can be seen as important forms of common knowledge because of their functions in facilitating or complicating knowledge integration within and between companies. Grant, (1996) argued that communicating and integrating knowledge with external partners becomes more difficult when there are cultural or language differences amongst the collaborating organizations because the effort required understanding the other party increases. The amount of common knowledge that is required in order to effectively integrate knowledge is therefore a key issue for the efficiency of inter-organizational collaborations.

Grant, (1996) states that inter-organizational knowledge integration requires common knowledge, and it requires overcoming the possible knowledge boundaries between organizations. In order to bypass these knowledge boundaries, boundary objects have to be included when designing processes of knowledge integration. Boundary objects are used to facilitate and encourage different groups/teams to work together without formal agreement. Boundary objects support collaboration between experts from various fields by letting them communicate, engage, share ideas, and work on a project.

3.4.2.3. Sharing knowledge

In a literal sense/logic of the term, knowledge cannot be shared; as if it's a commodity/stock, which can exchange hands from one person to the other. However, Lin & Lee (2006, p.75) cited by Shahid, and Imran, (2013, p.18) have described knowledge sharing as "the activities of how to help communities of people work together, facilitating the exchange of their knowledge, enabling learning oriented, and increasing their ability to achieve individual and organizational goals". While Newell, et al. (2015, p.237 - 38), recognised trust, networks and networking, and incentives and rewards as some of the important aspects of enabling context for collaborative and team work.

Trust has been highlighted as one of the important enabling context aspects of knowledge sharing for collaborative work. In KM literature, the effects and impact of knowledge sharing

has been widely accepted particularly in the context of intra and inter organizational perspective. Furthermore, Social capital literature by Nahapiet and Ghoshal (1998) has demonstrated that trust is a prerequisite for combination/exchange of knowledge in any form of working relationship in an organization. The trust that exists between the employees influences in one way or form, whether the knowledge shared can be relied upon or not. Newell, et al., (2009) highlighted that high levels of trust between employees facilitate the type of interaction which is required to share tacit knowledge, however, they emphasized that the establishment of trust is the difficult part.

Newell, et al. (2007) emphasized that trust and knowledge sharing is mutually reinforcing, thus trust help to decrease the costs of coordination and knowledge sharing in collaborative situations. The patterns of interaction between knowledge professionals in an organization are significant aspects in the efficiency and effectiveness of the group/team and may even have detrimental effects on the ultimate success of the project.

Newell, et al. (2009) underlined networks and networking (inter personal and inter organizational) as one of the key enablers of knowledge sharing in knowledge intensive organization. According to Swan et al. (1999) networking is a central aspect of process perspectives, which promotes knowledge sharing through social communication processes. KM literature emphasised the importance of networks and networking for knowledge creation and sharing, and it draws mainly from a practice perspective of knowledge of management, which perceives knowledge as a collective activity, situated in practice, and integrated and distributed in the life of a community. Networks are paths in which knowledge flow and provide a platform in which employees easily identify and extract the knowledge of field experts or other key knowledge holders in critical organizational operations. Networks provide interconnected groups/organizations in a specific field (sector/discipline) of knowledge and practice that interact socially to share knowledge and expertise with one another. Generally, networks and networking involves the interaction and cooperation between different professional groups/teams, which may possible have unique cultural values, norms, and interests in knowledge sharing.

KM literature emphasised the significance of networks and networking for knowledge sharing. The most practical example of individual employee participation is professional bodies, which

has over the years gained popularity and proven to be a reliable vehicle to enable knowledge sharing, in which sharing of ideas take place between experts from within or different subject discipline/sectors. Remarkable, these professional bodies (like LIASA) hosts conferences in which experts and professionals from different sectors (public and private) come together in one room to engage and debate on current developments in their work and research environments. Inter-organizational network where in widely distributed organizations (across nations, departments, business units, and corporate staff) has also been cited in KM literature as an enabler of knowledge sharing

Incentives and rewards for knowledge sharing has been underlined as an important enabler of knowledge sharing from the practice perspective of KM and knowledge work and it has been it has been a subject of research passionately debated in KM literature. There's consensus amongst many that financial incentives can positively influence knowledge sharing, however there's another school of thought which suggests that incentives, as extrinsic motivators, can be less effective at encouraging knowledge sharing, as compared with intrinsic motivators. Wolfe and Loraas (2008) as cited by Newell, et al. (2015) conducted research to examine how different types of incentives motivated knowledge sharing. They found that both monetary and non-monetary rewards had to be considered sufficient in order to motivate knowledge sharing. They also suggested that it might be difficult for non-monetary incentives to be deemed sufficient, especially when employees are being asked to share proprietary knowledge (i.e., knowledge that if hoarded might give them some advantage). Von Krogh (1998) argued that incentive systems can help to build a culture of care within an organization which as a result will promote knowledge sharing. Newell, et al. (2015) had a different view and stated that combining recruitment and selection practices, training and development opportunities are far more sophisticated reward system than money. Knowledge sharing can be encouraged if employees and knowledge sharing initiatives are appropriately recognised and rewarded. For an example public servants are arguably motivated by and committed to making a difference by way of better policies services and programs aimed at better service delivery to the people, therefore recognition and reward schemes need not to involve monetary rewards. There are many examples of successful recognition and reward schemes that may simply involve workplace such as informal recognition and celebration events, organizational level acknowledgements such as secretaries' awards, or employee of the year.

3.4.2.4. Codifying knowledge

Davenport and Prusak (2000, p. 68) stated that the notion and the idea behind knowledge codification "is to put organisational knowledge into a form that makes it accessible to those who need it. An example of this is the legal system in which laws and decisions that act as precedents are codified in many texts". Knowledge codification turns knowledge into a code which makes it organised, explicit, transferable and easy to understand. Ruggles (1997) and Davenport and Prusak (1998) view codifying knowledge as the primary vehicle by which knowledge becomes portable, re-usable or transferable within the organisation. Notably Davenport & Prusak, (1998); Bhatt, (2001); Grover & Davenport, (2001) stated that knowledge codification process is based on managing an organisation's internal and external knowledge and the conversion of this knowledge in an accessible and usable form using information technology and information management skills. They further stated that the main activities related to this process are: integration, combination, structure, coordination, conversion, editing, review, approval or rejection, storage, organisation, maintenance, cataloguing, classification, retrieval and organisational memory.

KM literature highlighted obstacles related to codifying knowledge, however there are organizational contexts in which codification is a very useful, effective and efficient way to exploit individual and organizational knowledge. Many large organizations such as public sector organizations have successfully developed knowledge management systems and document management systems in which codified knowledge from projects, routine work, and guidelines on how to deliver desired results on complex projects are stored codified in computer programs such as intranet, knowledge repositories, decision-making tools, groupware, document management systems and others. Although, they do not solely rely on codified knowledge, it is strategically important project knowledge is codified but the challenge for many organizations is keeping knowledge up to date. Newell, et al. (2009) highlights that different group of professional/knowledge workers rely heavily on codified knowledge in their work, and specifically highlight the legal profession as one of the professions which rely almost entirely on codified knowledge. The legal profession generates vast quantities of codified knowledge that take the form of legislations, court judgements, court proceedings, case laws which are subsequently applied in future court proceedings and some are revised overtime. However, it must be stated that practice view of knowledge suggests that KMS are limited by the possession view of knowledge that they assume. Thus, the practice approach views

knowledge (unlike data) as something that cannot simple be possessed and transferred; rather it is continuously recreated and reconstituted through dynamic, interactive, and social, action, and interaction.

Newell, et al. (2009) highlighted common language, tangible output, and time as key enablers of knowledge codifying. The development of a common language for knowledge codification generally involves high fixed costs and requires time and effort to implement standards of reference (numerical, symbolic, geometrical language, and taxonomies of many kinds) standards of performance, a vocabulary of precisely defined and commonly understands terms and a grammar to stabilise the language. Common language and codes affects knowledge composition and knowledge exchange, language is of direct and important application in the social relations; language is a tool that facilitates exchange of views among individuals and eases exchange of information among them. By use of common language people ask questions from each other and carry out their trade activities within the society. Orr (1990) proved how a common language would facilitate the transfer of knowledge and experiences among experts, therefore emergence of a common language within an organization lead to creation and transferring new comments on various events and give rise to creation of composition of different forms of knowledge which generally are hidden. Common language is essential particularly in areas in which there could be differences which arise from differing viewpoints of different interest groups or disciplines. Simple put the knowledge codification process requires the development of a structure and a common language to access and interpret knowledge, without common representation standards, no consistency or common dialogue of knowledge would exist.

Common language should be established in order to make communication and knowledge codification and sharing easier and more effective. Knowledge codification of tacit knowledge can be extremely time consuming and expensive exercise, in some instances, knowledge cannot be effectively transferred without what the US army calls “face time”, the actual interpersonal sharing of the what, how, why, when and who of the critical factors affecting the performance of an organization. Organizations must ensure that time and opportunity for knowledge codification is provided, time is always an issue in the modern workplace but if it is allowed to become an obstacle to knowledge codification then, the focus will always be on the urgent rather than the important. Time must be made to encourage and allow learning.

3.5. Contingency and universalistic approach knowledge management framework

3.5.1. Contingency and universalistic approach

This study challenges the pursuit of a universalistic approach to KM framework (commonly known as best practice or one size fits all), which is a common feature in KM literature and present a case for a move to contingent/conditional approach that take into account the organizational contexts and diversity, KM purpose, knowledge processes and enabling context. A significant number of KM studies such as Wong & Aspinwall, (2005), Davenport et al., (1998), Skryme & Amidon, (1997), have acknowledged the relationship between KM activities, organisational distinctive characteristics and knowledge management purpose as a KM success factor; however, few KM frameworks have acknowledged this. KM literature is characterised by mainly two knowledge management frameworks (thus contingency theory and universalistic knowledge management framework approach) for the adoption and implementation of KM in organizations. However, this study supports Cruywagen, et al. (2008), Franken and Braganca, (2006) contention that universalistic approach to KM framework is not always applicable and suitable to all kinds of organizations. Before selecting and/or designing KM framework organizations need to first understand their knowledge management needs and what they want to achieve out of implementation and practice of knowledge management. Organisations are different and with distinct knowledge management needs hence the solutions provided must be customised to meet that specific need, in the South African public sector context, the government departments are different in terms of unique, complex and distinctive organizational characteristics and legislative mandates. It is widely acknowledged that there are various kinds of KM frameworks provided by KM literature which can work well and deliver desired results in a particular kind of organizations but fail to deliver the same results in other organizations.

Mainstream KM literature suggests that KM frameworks are similar in nature, which somehow fuels the view that a generic KM approach which suits all kinds of organizations exists. This view implies that organizations competes and operates in the same way, however this view has been challenged by Miles, et al. (1978) by providing empirical evidence which challenges this view. Simply put most KM frameworks present KM universalistic approach while failing to

recognise unique, complex and distinctive characteristics of organisations. Miles, et al., (1978) argue that each organization requires a different approach to the adoption of KM in order to gain a competitive and sustainable advantage towards its counterparts. Whereas Dick, (2011, p. 14) stated "to account for these contextual differences, they emphasise the need for KM models and frameworks to shift their focus from the need for a best-practice approach to a best-fit approach". This implies that KM framework should generate a system which they will use to examine and comprehend an organisation's knowledge management needs, and, based on the KM needs, provide an informed perception and recommend suitable and applicable approach to the selection of KM framework. Therefore, KM models should be chosen or built based on the understanding of the organizational characteristics, knowledge purpose, knowledge processes and enabling context. Failure to acknowledge the distinctive characteristics of the organization, often leads to a high failure rate of KM initiatives which fuels the assumption that KM is merely another management fad. To account for contextual differences between organizations KM models should shift focus from universalistic to a contingency approach. In arguing for the contingency approach, KM scholars and practitioners caution that many proponents of KM are working in an organizational context with a knowledge economy mind-set. Approaching organizations as a singular phenomenon is inappropriate and potentially misleading. KM just like any other management concept works effectively to the extent that, the KM models used are refined to account for the variations in organizational forms.

3.5.2. Universalistic approach to knowledge management frameworks

The concept of a universal approach is based on the assumption that there is a set of best KM practices which are universal in the sense that they are best in any organization, and that adopting them will lead to superior organizational performance. According to Rumizen, (2002, p.285) defines best practices as processes and techniques that have produced outstanding results in another situation and that could be adapted for your situation. Like all knowledge, it is contextual.

Cruywagen, (2010, p.102) cited KM literature which largely focus on a universalistic approach thus, Davenport*, et al.*, (1998), Choi& Lee, (2003), Holsapple & Joshi, (2000), O'Dell*, et al.*, (1999), Skyrme & Amidon, (1997) and others; and ignore contingency theory approach to

knowledge management. However, these studies contributed to the development and a better understanding of KM, nonetheless it must be emphasized that they fail distinctive characteristics of the organization and the purpose for the adoption and implementation of KM in different organizations.

Organizations science literature emphasizes the significance of interactions between organizations and their environments so that what organizations do relies heavily on the context and environment in which they function, it is unimaginable that there are KM scholars and practitioners who advocates and defend the applicability and use of a universalistic approach to knowledge management practice. It is common cause that what would generally work/applicable in one organisation may not necessarily work/apply in another due to organisations dynamics such as KM framework, knowledge management purpose, knowledge processes, organizational culture, and others. HRM literatures advocates that universal approach can be used to inform decisions on what practices are most likely to fit the needs of the organization, as long as it is understood why a particular practice should be regarded as a universal approach and what needs to be done to ensure that it will work in the context of the organization.

KM scholars who supports a universalistic approach to knowledge management emphasizes that they identify with a universal approach/best practices because they want to avoid reinventing a wheel, it is time and cost effective, operational superiority, and improve performance competences and many others. Furthermore, they argue that best practice is tried and tested mechanisms and practices which in most cases are superior when it comes to applicability that the new ones. However, it has to be noted that one size fits all doesn't work in knowledge management practice, due to organizations dynamics as stated above. The practice of a universal approach is still a dominant future in KM, HRD, organization theory literature, organizations continue to look for better practices and implement them as they are.

3.5.3. Contingency approach to knowledge management frameworks

Cruywagen et al. (2008, p. 102) argue "identifying knowledge management best practices, benchmarks or influencing factors seem to be the goal of the majority of empirical studies in knowledge management". Furthermore, in (p.103) "best-fit approach involves considering an organisation in its entirety, including its internal and external environment, and examining the

relationships between its various entities, before recommending the most suitable approach to knowledge management". It is out of this argument that this study advocates for a change from a universalistic approach to the selection of KM framework, to a contingency approach which caters for organisations dynamics which includes among others the distinctive characteristics of the organization. In line with contingency theory, a distinctive characteristic of the organization and the purpose of implementing knowledge management should be compelling motivation (or key denominator) for supporting and advocating for the use of a contingency approach, in analysing contingency approach. In arguing for a contingency approach Cruywagen, et al. (2008) used systems thing theory and highlighted organizational context as a significant element in analysing an organization, and thereafter they provided five key concepts of systems theory which they recommended it should be used as a measure for contingency theory approach.

Firstly, stated that "a system is an integrated whole consisting of parts". This argument basically implies that in the selecting of Knowledge management framework process; first identify the framework's distinct capabilities in line with knowledge processes and activities to gauge whether it will yield the desired results. Taking into consideration that knowledge management frameworks are similar in nature but in fact they are different, therefore their applicability to organizations also differs. Knowledge management framework applicability and suitability should be tested against the distinctive characteristics of the organization and the pillars of KM frameworks. Secondly they argue that "parts of an integrated system are organised around a specific purpose". In the KM framework context, Newell, et al. (2009) argued that the strategic purpose of implementing and practicing of KM is either knowledge exploration or knowledge exploration or the combination of the two. Therefore, the purpose of knowledge management framework should be based on Newell et al. framework.

Thirdly, they stated that "the whole is larger than the sum of its parts". Thus, KM framework cannot therefore be discussed in terms of some of its KM components, but should consider relationships and interdependence between all the components. The pillars of knowledge management frameworks (thus people, culture, technology, processes, content, measurement etc.) their relationship to one another in terms of enabling/hindrance of the adoption and practice of KM and their independence and integration, thus whether they can be used independent to one another. Organization's culture has been recognised as one of the most important pillar which enables practice of KM. However, it is widely acknowledged for

knowledge management initiative to achieve its desired results, there has to be a balance between knowledge management pillars, too much reliance on technology has arguably led to high failure of knowledge management.

Fourthly they argue that a "system is a whole in its own right, but also part of one or more larger wholes". This means that any system should be viewed in the context of its parts, which are systems themselves, as well as the larger system it forms part of. In terms of KM this means that KM should not only be viewed in terms of its underlying activities, but also in terms of the organisation in which it is or will be deployed. Thus KM framework should therefore be context sensitive. Fifth, they argue that systems co-produce each other. This means that a system is co-produced by factors present in other systems. In terms of KM this means that KM is not only shaped by its underlying KM activities, but also by factors belonging to other systems, for example, the industry within which an organisation operates, organisational structures and leadership, to name a few.

Cruywagen et al. (2008) believe that best-practice models and frameworks are prescriptive about what practices and procedures organisations should follow. On the other hand, best-fit approaches would consider the organisation as a whole, its internal and external environments, and its relationships with other organisations before recommending the most suitable approach. Using this holistic approach of systems thinking, they develop a knowledge-centric framework which they argue is aligned with the characteristics of a best-fit approach.

Furthermore, they argue that most of KM frameworks fail to identify or address the unique and distinctive characteristics between organisations and canvases for the one size fits all and fail to address distinctive characteristics between organisations. This discrepancy often leads to the failure of KM initiatives, which as a result fuel the fear that KM is simply another passing fad. To address this shortcoming of unique, complex and distinctive characteristics between organisations, KM frameworks should divert from a universal approach to a contingency approach. This means a framework should first provide a mechanism to investigate and understand an organisation's context, and then, based on the context, provide insight into the most suitable approach to KM. This highlights the need for public sector organizations to adopt what Miles, et al. (1978) refers to as best-fit approach to KM, and the implications of these differences in terms of choice of KM approaches and such a framework will have different characteristics than a framework promoting universal KM model.

Chapter 4: Knowledge Management frameworks

4.1. Introduction

This chapter uses the draft DPSA KM framework to demonstrate that the DPSA subscribe to universal knowledge management framework and use three international knowledge management models (Inukshuk: A Canadian knowledge management model, DON Navy KM model and Health Canada) to demonstrate that in other countries such United Sates of America, Canada, Australia and others; government departments draft their own KM frameworks when implementation and institutionalising the practice of KM in line with their unique, complex and distinctive characteristics of the organization.

4.2. Knowledge Management models

Knowledge management literature advocates that the main purpose of KM framework/models is to provide procedural and structural plan which guides the execution and implementation through the stages of designing, building, implementing and maintenance. However, most KM models provide very little, if at all, guidance which goes beyond just outlining the pillars of KM (thus, technology, culture, processes, and people) and fails to demonstrate how KM initiative should be implemented. The majority of KM frameworks are built on Nonaka Takeuchi's SECI knowledge spiral, and Ackoff's pyramid to wisdom, which to a greater extent fuels the perception that knowledge management frameworks are similar. Furthermore, KM literature (Robinson et al., 2004; Axelsson and Landelius, 2002) stresses that KM models are supposed to be used as a tool which help organizations to decide which KM processes and activities are required for the implementation and practice of KM.

Dalkir, (2005, p.72) states that "knowledge management models need to be grounded in a robust, sound theoretical foundations "to ensure that certain level of completeness and all critical factors have been addressed. Furthermore, KM models should provide a better description and provide blueprint/roadmap for getting where the organization wants to be with adoption and implementation of KM.

The KM frameworks used in this study were selected because they possess the following critical characterises:

- They represent a holistic approach to KM thus they distinctive and comprehensive and they are built around the main pillars of KM in the public sector.
- They have been continuously cited/quoted, reviewed, critiqued and comprehensively discussed in the KM literature
- The models have been implemented and field tested in public sector organizations with respect to reliability and validity

Furthermore, these models have been selected with a view of providing the widest possible perspective on public sector KM, combined with a deeper, more robust theoretical foundation for explaining, describing, and better predicting the way to implement KM initiatives in the public sector. From the limited public sector models, three international KM framework were identified and chosen for the purposes of the study. The choice to select these models is based on the identification and analysis of many perspectives regarding public sector KM models.

The justification for analysing the Draft DPSA KM emanates from the fact that it is the latest KM framework which is supposed to signed off and become a national KM framework for public service (all government departments, provincial and local government) in South Africa. According to NKMSF, (2016) the framework is supposed to be used as a guide/blueprint for the development of KM strategies/frameworks for each department and municipality across the three spheres of government. While the DON KM model was selected because it is the first public sector KM model to be acknowledged as the best and a leader in military/defence knowledge management as well as being touted as a good example for the private sector to follow. It is in fact one of the most cited public sector KM model in KM literature due to its success in the implementation and practice of KM.

Just like DON KM model, Inukshuk KM model is one of the most cited public sector KM model in KM literature and it has been drafted by one of the most recognised scholars of KM literature Professor John Girrard. While, Health Canada: Vision and Strategy for KM and IM/IT is one of the most cited healthcare KM model, and Canada is one of the countries which the DPSA KM team consulted before the drafting of the first KM framework in 2001. Above all, all the three international KM models were adopted and implemented and tested regarding

reliability and validity in the public sector organizations in their respective countries. And they were reviewed and analysed/discussed at length in the KM literature by KM scholars/gurus.

4.3. The DPSA Knowledge management strategy Framework

According to the Draft DPSA KM strategy framework (2016), the department has among other reasons drafted the KM framework, because the public service institutions has progressed with implementing knowledge management without an agreement on a framework of standards, systems and commonly accepted definitions and terms. Furthermore, the implementation of KM in the South African public service has grown in an ad hoc fashion and has resulted in multiple approaches leading to weak integration of KM in the main-stream institutional functioning processes.

The purpose of KM framework is to provide conceptual clarity and leadership that allows public service institutions to implement KM successfully. It aims to provide and define a standardized way for government across the three spheres of government (thus, national, provincial and local government) to inform, develop and form the base of their own individual KM Strategies. It provides the reference on how KM shall be implemented uniformly within the public service of SA. According to NKMSF, (2016 p.14) the framework recognises that Institutions are not homogenous hence it is not possible to produce a blueprint that can be generically replicated across all Institutions. The Framework is thus "principles" rather than "prescriptive" based and adopts the approach of elucidating the principles, standards, models and practices proven to support and sustain effective knowledge management. Institutions are expected to develop their systems of Knowledge Management by adopting the said principles and standards and adapting the models and operational practices to match their specific Institutional requirements".

The DPSA KM strategy framework is based on Parthenon KM model which presents knowledge processes which involves acquisition, creation, storage, management, and usage of knowledge to meet the organizational objectives and assist with decision making for efficient and effective service delivery. It highlights strategic management (thus, planning, governance, and implementation); four main pillars of knowledge management (thus leadership, people,

content, and technology); processes of knowledge management; implementation of knowledge management; and roles and responsibilities.

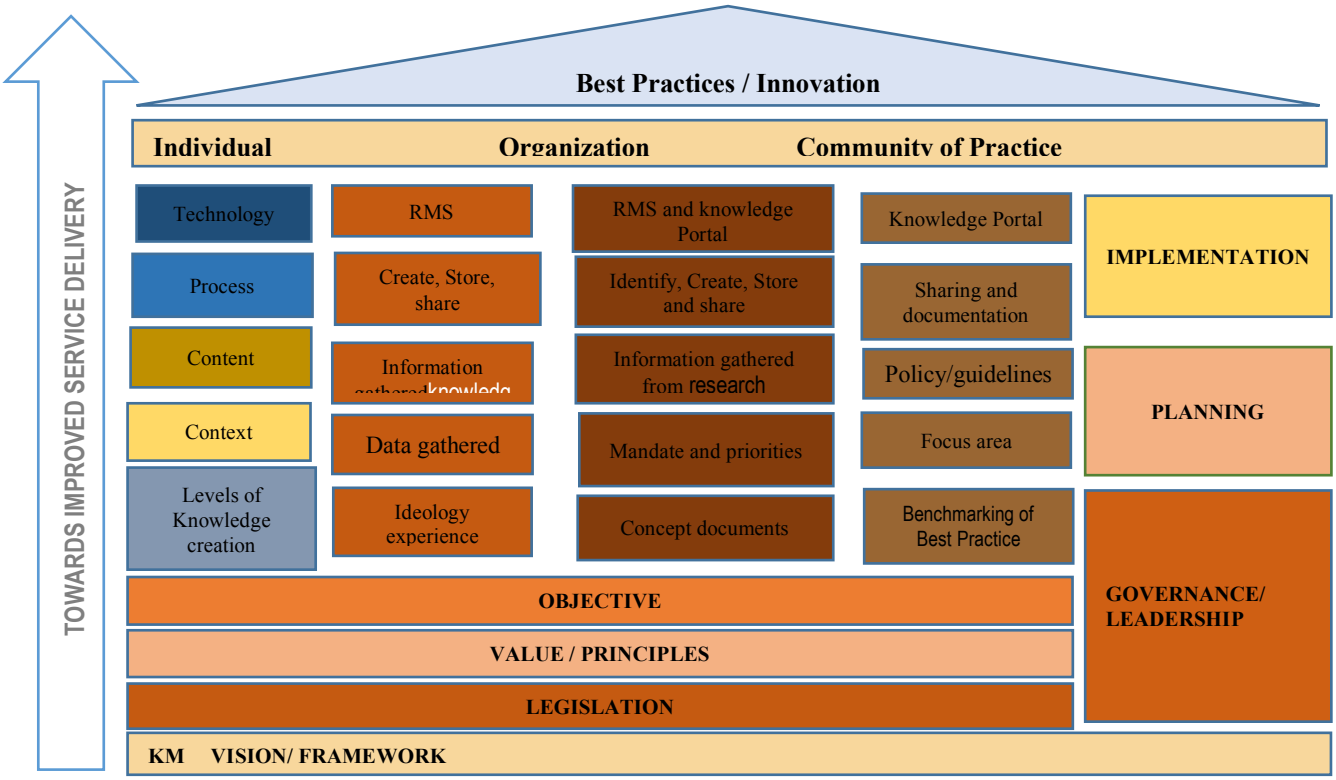


***Figure** 1: The Draft DPSA KM strategy framework*

***Source**: DPSA. 2016. Draft DPSA knowledge management strategy framework*

4.3.1. Strategic Management Function

4.3.1.1. Planning

According to this framework KM is considered as one of the fundamental drivers for public sector organizations to achieve their strategic plans and objectives, by growing the organisation's knowledge assets and intellectual capital. Furthermore, it states that public sector legislative mandates and priorities are informed by, amongst others. It described the public service's corporate memory as the knowledge in all the documents that came out of discussions and engagements that took place at the birth of the democracy and stressed that the importance of prioritising the coordination of the corporate memory and the development of knowledge pool of the public service. The planning stage outlines the priorities and mandates

that are aimed at enhancing government's impact, particularly in public service delivery, which informs its knowledge needs.

4.3.1.2. Governance

The framework stress that the management of intellectual capacity in government as the primary function of KM is governed differently in the three spheres of government. However, it becomes essential that KM as a strategic function in the departments is allocated or positioned tactically to assist in achieving organizational objectives. National departments positioning of the KM function differs from department to department, but in most instances it is observable that it is driven from policy, strategy and research.

4.3.1.3. Implementation

It is at the implementation stage wherein knowledge management needs are outlined, in line with specific line functions. Access to all types of knowledge becomes critical at the implementation stage, closer to service delivery where most challenges are experienced. Knowledge in government departments is enclosed in annual reports, case studies, workshops reports, articles, project reports and a variety of sources that contain best practices, lessons learned and others. Furthermore, it becomes crucial for the team which is responsible for the implementation process to share tacit knowledge contained in their successes and failures, new methodologies and to explore solutions collaboratively.

4.3.2. Pillars of knowledge management

4.3.2.1. Culture and Leadership

According to KM literature, leadership deals with an organization's strategic direction with regard to implementation and practice of KM, taking into consideration knowledge requirements, knowledge sources, prioritisation and resource allocation of the organisation's knowledge assets. For KM initiative to be successful, leadership should create a conducive environment for adoption and implementation of M.Th. framework posits that public servants are pillars of KM, since they are responsible for among others the provisioning of formulation of policies for good governance; provisioning of quality services to the general masses of South

Africa. Successful implementation and adoption of a KM framework in the public sector requires a champion who can provide strong and dedicated leadership needed for the institutionalisation of KM in the organization. Arguably, the biggest barrier to KM implementing in the public sector is behaviour modification which requires employees change from organizational culture of hoarding information to knowledge sharing. Public sector leadership critical role in ensuring a positive culture that promotes creation and sharing of knowledge in an organization. Furthermore, the framework stress that the adoption of a KM initiatives necessitates the need for organizational change; which requires the top management support.

4.3.2.2. People as pillars of KM

The NKMSF, (2016) acknowledges that KM adoption and implementation must be centred on people, because people are the main pillar of KM in any organization. This argument is backed by Wiig (200, p. 4) when he states that "there are emerging realisations that to achieve the level of effective behaviour required for competitive excellence, the whole person must be considered. We must integrate cognition, motivation, personal satisfaction, feelings of security, and many other factors". While Snowden (2002; p. 237-8) notes that "organizations are gradually becoming aware that knowledge cannot be treated as an organizational asset without the active and voluntary participation of the communities that are its true owners". Public servants should be empowered with relevant and applicable KM skills, competencies and expertise which will enable them to create, share, and codify knowledge towards achieving government objectives and goals.

4.3.2.3. Content

KM implementation involves decision-making about the content of the knowledge base databases, knowledge repositories and design knowledge codification processes. This process identifies knowledge, its origins, and users and how it can be classified and categorized. The competencies and expertise needed for this type of architectural judgment are the ones which organize content from disjointed documents, memos and reports into the realm of a public service knowledge base. A need for strong investigative and analytical skills, knowledge of the public service in the context and a deep understanding of public service culture cannot be understated. Designing knowledge architecture requires comprehensive inventory of the

specific departments' knowledge and the public service as a whole. Knowing the forms of knowledge assets and resources to seek, where they are likely to be found and how to find them requires high quality communication skills and a deep understanding of public service behaviour and structures. A thorough review of the organization chart and processes is helpful in this regard.

4.3.2.4. Processes

KM processes involve the application of a number of activities aimed at leveraging the knowledge assets available in an organization. Traditionally, government departments are aligned with hierarchy and bureaucracy in structures, however this framework argues that bureaucracy is designed to establish checks and balances not to impede progress. Checks and balances are meant to ensure accountability for actions, decisions and outcomes. In this regard, government structure has standardized both procedural and structural aspects. Structural aspect in government constantly changes with changing in government structural machinery (i.e. new government taking over the reins). The procedural aspects remain more or less the same and may change slowly if they have to change. Integration of KM in government business processes is quite crucial to inform both structural and procedural aspects. Process analysis is one of the best ways of understanding government processes and can be used in the public service where KM is to be applied. This technique will assist in defining processes and their nature and the decisions to be made. Furthermore, it will assist with the integration of KM to improve processes, and can be applied to better understand public service elements and processes that will supported and enhanced by KM.

4.3.2.5. Technology

According to NKMSF, (2016) there are various ICT infrastructures, knowledge codification systems and processes which the South African public sector need to support the implementation and practice of KM to realize the desired goals and objectives. It is a well-documented that ICT is an enabler of KM, the success of KM initiatives is not about the use of advanced and sophisticated ICT tools, on the contrary it is about how organizations use technology to support knowledge management processes (thus, knowledge creation, integration, sharing and codifying. To support this undertaking, Davenport and Prusak argued against the excessive focus on technology in which organisations design KM frameworks

around technology. Furthermore, McAdam and O'Dell' (2000) also stressed that technology is not "be it all", for the success of KM and further argue that some organisations design KM to suit the technology rather than focus on people. They stressed that organisational structure, organizational culture, technology (ICT infrastructure) and people should work together to make sure knowledge flow smoothly throughout the organization.

4.3.3. Processes of knowledge management

4.3.3.1. Identify

According to NKMSF, (2016) the initial and fundamental stage of knowledge process where critical knowledge needed, is the identification of key experts/experienced employees within the organization. And identify knowledge gaps and the types of knowledge required in the various departments/units of the organization. KM literature suggests gap analysis (or knowledge audit) for identification of knowledge, which is basically meant to identify the existing gaps between the existing organizational knowledge base and knowledge required to achieve the overall goals and strategic objectives of the organization. There are several methods which departments can use to identify knowledge such as brainstorming (experts and novice share knowledge), creation of yellow pages (list of experts).

4.3.3.2. Create

Creation is addressing the knowledge gaps through knowledge conversion and generation of new knowledge. There are many ways to create new knowledge. At the individual and team level by training, learning by doing, joint problem solving, or brainstorming activities. At the department or organizational level, new knowledge is created for products, services, internal processes, and procedures. Often, new solutions, great ideas are not recorded, either for learning or reuse. Hence, these remain solely as individual knowledge and lost by the organization.

4.3.3.3. Store

Knowledge storage involves collection and preservation of organizational knowledge. This preserved knowledge is organized so that it can be retrieved quickly and easily by the users. It

is not easy to document individual experience and expertise (tacit knowledge), and therefore, it is important to know and retain those who have this expertise. The explicit knowledge captured must be stored according to the records management policy and classified according to Minimum Information Security Standard policy. It is critical that organisation ensure that the document management system makes provision for both these formats (hard copy and online). The departments should have an effective Electronic Document Management System which has an ability to capture, describe and categorize, store and retrieve, share and reuse stored documents regardless of specific format.

4.3.3.4. Share

This is basically continuous sharing of knowledge between members of an organization, which create a conducive platform for continuous learning which one of the key ingredients for sustainability of KM. Coaching and mentoring are other means of sharing. The utilisation of communities of practices, peer assist, twinning and others as a knowledge sharing platform can be used for documentation of tacit knowledge where the experts share with all the people within the organisation the work that they have been doing in relation to their work area over the years that has not been captured. The knowledge fairs can also be recorded for future with the usage of the digital video. Success of KM initiatives relies on soft issues, thus KM is not about sophisticated KM framework and ICT infrastructure, there are simple techniques which can be used to support knowledge sharing activities, which amongst others includes intranet databases, best practice, etc.

4.3.3.5. Apply

Application is the use and reuse of knowledge in the organization. It translates knowledge into action. A lot of knowledge remains under-utilized. Knowledge adds value only when it is used to improve products and services. Applying knowledge is arguably one of the most if not difficult KM activities in the public sector. Knowledge can only yield the required results, when it is being scrutinised and used. Knowledge application mainly occurs in projects, workshops wherein there's some form of interaction between members of a grouping/team in the organization. After which, project knowledge must be codified for the purposes of wider access and expansion of the organizations knowledge base and provisioning of future projects.

4.3.3.6. Implementation

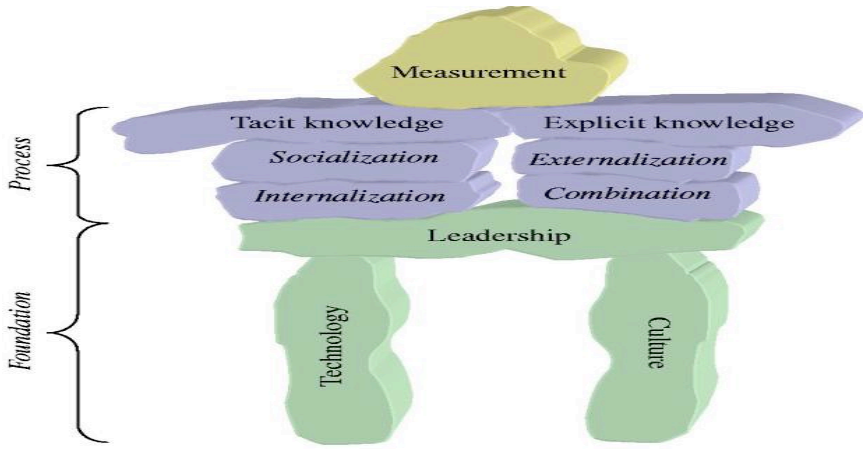
This framework recommends use of the SAKE (Semantic-enabled Agile Knowledge based E-Government) as expanded by Smith & Foche for implementation and institutionalisation of knowledge management in South African public sector organizations.

- Conduct KM Environmental Analysis
    - Knowledge mapping is the process of detecting existing knowledge within the organisation and identification of a specific directorate or sub directorate it resides.
    - Knowledge audit is the mechanism used to discover the extent in which knowledge management (KM) practices and activities are being used.
- Contextualise KM and establish KM framework for the organisation
- Develop KM strategy and align to organisational Vision, Mission, Strategic objectives
- Develop KM implementation plan and roadmap
- Implement through pilot projects
- Formulate KM policies and Assessment procedures
- Roll-out across entire organisation
- Monitor and evaluate KM performance

4.3.4. Roles and responsibilities

The model advocates for the creation of new posts (if they do not already exist) within government departments such as CKO responsible for strategic management and direction on the adoption, implementation and institutionalisation of KM in the South African government departments. The function of this kind of position is draft the government department's KM framework, implementing, and integrating KM into the day-to-day activities; KM managers, responsible for creating a favourable climate, culture and policies for institutionalisation of KM, in which a culture of collaborations within departments shall be built into programmes, policies at various levels; KM champions, responsible for the creation of appropriate relationships and partnerships for knowledge sharing and creation throughout the department; and the creation of knowledge management committee which will oversee and provide strategic direction and advice for the effective adoption and implementation of KM.

4.4. The Inukshuk KM model



Source: Girard (2005)

***Figure** 2: Inukshuk knowledge management model*

***Source**: Girard, J. (2005) The Inukshuk: A Canadian Knowledge Management Model*

The Inukshuk Knowledge management model came about as a consequent of Professor John Girard's research on knowledge torii. It consists of five elements (thus technology, leadership, culture, and measurement) which are similar to Stankosky's four pillars of KM, some of which are incorporated in the four pillars. The Inukshuk is one of the distinguished symbols which is connected with the history and tradition of the people of Canada. In his study of knowledge torii, Girrard, (2010 p. 72) cited Virtual Museum of Canada which described Inukshuk as "like a person, an arrangement of stones, often resembling the shape of a human and it is used as a navigational aid, as a marker for hunting grounds and caches of food or supplies, in hinting to lure geese and corral caribou and as a way to mark sacred ground". This KM model was drafted by employees of the Canadian Department of National Defence and was widely accepted as the department's strategic plan for the adoption and implementation of knowledge management.

This model was pioneered and spearheaded by Professor John Girard, working together with the employees of the Canadian Department of National Defence. The framework was widely accepted as the department's strategic plan for the adoption and implementation of knowledge management. The framework was successfully implemented, because among other reasons Inukshuk is a symbol closely associated with history and tradition of Canada, and it is now one most cited public sector KM framework in KM literature. Nearest resemble people, people plan

an important role in implementation of KM. Although Inukshuk are similar in structure, they are nonetheless distinct from one another, thus KM implementation for every organization

Girard, (2010) associated the model with Inukshuk, and argued that just like Inukshuk, the model needs suitable balance of key elements of KM or the implementation of KM will eventually collapse. For KM implementation to succeed in any organisation, it requires strong leadership, advanced technology and most importantly culture of knowledge creation and sharing, and the highest part of the model, thus measurement.

4.4.1. Leadership

This model asserts that the Canada: Department of Defence need leadership which does not view KM as a set of emerging a management fad but rather, as an important management tool, furthermore it needs leadership which is well informed about the whole concept of KM. It needs leadership able to articulate KM vision and strategies, develop, and institutionalise KM. In doing this, leadership should draft knowledge management policies, priorities, and incentives needed to guide implementation of KM activities

4.4.2. Culture

KM literature advocates that culture is one of the most influential, defining, and enduring pillar for the institutionalisation of KM. Notably; successful KM frameworks endeavour to understand, augment, integrate, and adapt organizational culture and processes rather than try to change it. One of the most cited organizational obstacles to successful implementation of KM initiatives is the potentially negative impact of culture and the role it plays in organizational change, particularly perception of knowledge as a source of power.

4.4.3. Process

The process module of the model is grounded on the Nonaka and Takeuchi, (1995) SECI model (socialisation, externalisation, combination, and externalisation). Socialization (thus, tacit to tacit) knowledge conversion is a common feature in military/defence institutions, a perfect demonstration of this is when an experienced soldier meet/work face to face with young and

less soldier in general meetings, workshops, or work together in project etc. one of the most quoted way of socialisation in military organisations sharing experiences through telling war stories. It is common causes that accurately arranged/stories are a very influential method of transferring tacit knowledge from one soldier to another.

Combination (thus, explicit to explicit) may occur when an experienced and knowledgeable soldier document specific knowledge and experiences on a specific discipline of military literature into some form of repository in which the whole organization will have wider access to that form of knowledge. According to KM literature an organization which develops and formalizes best practices is a typical example of how military organizations codify explicit knowledge. For the purposes of combination, defence/military organizations use doctrine and standard operating procedures to document important information.

Internalization (thus, explicit to tacit) occurs when knowledge created through a consolidation of collected/codified explicit knowledge and tacit knowledge. In a military organization this normally happens when soldiers process a series of principles and obligations with the hope that all Defence team members will adopt these important philosophies and know at an almost instinctive level how to respond when encounter a similar situation. While, externalization (thus, tacit to explicit), this is the creation or transfer tacit knowledge to the explicit form. In a military organisation, it is auctioned through lessons learned and after action review processes.

4.4.4. Technology

Well balanced and sophisticated ICT infrastructure is a particularly important piece of the puzzle in military organizations wherein its operations are dispersed across a geographical area. It is used collect, share, and create new information related to their work, simply put it is used for knowledge codification, and facilitation of knowledge sharing, integration and creation. The important point to state with regard to KM implementation of KM and technology is the fact technology is not a synonym of knowledge management it is an enabling instrument.

4.4.5. Measurement

Measurement is the last pillar of the Inukshuk KM model. It is basically used by stakeholders and management to determine whether the institutionalisation of KM practice has the one element that will allow stakeholders to determine if KM activities have yielded desired results and contributed to the strategic goals and objectives of the organization. For this course military organizations use surveys and knowledge audit to test the impact of adopting and implementing KM.

4.5. Department of the Navy KM Model

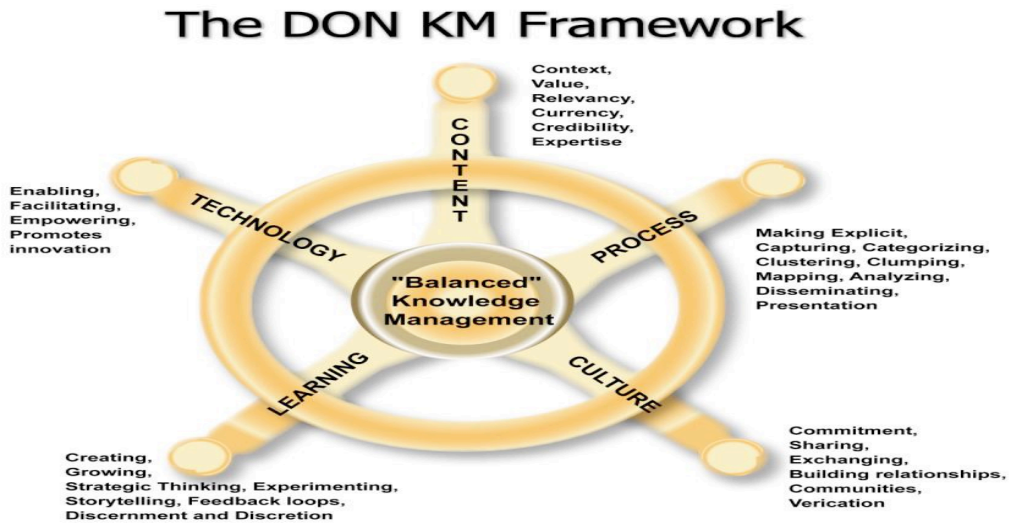


***Figure** 3: The DON KM framework*

***Source**: Department of the Navy. 2001. Information Management/Information Technology Strategic Plan*

According to DON KM strategy (2005 p.1), "the vision of KM is to create, capture, share, and reuse knowledge to enable effective and agile decision-making, increase the efficiency of task accomplishment, and improve mission effectiveness". The implementation of this model is in four-fold. Firstly, creation of awareness about the adoption of KM, and demonstrate that the practice of KM to operational tasks and business processes command, will facilitate significant improvements to the organization's mission. This is basically the marketing of knowledge management of KM, stressing the benefits which it can bring to the organization. Secondly, encourage commands (thus, managers of sub-directorates) to adopt, practice, and implement KM initiatives, and procedures, which will improve internal operations and day to day work.

Thirdly, support and encourage commands (Managers) to sell the good stories of KM by sharing their experiences, lessons learned, outcomes to nurture collaboration, shortened learning cycles and many other benefits of KM. Fourth, help commands (managers/leaders) in the implementations of KM build upon the experiences and resources of others.

According to Bennet and Porter, (2003, p.1) the former CIO of DON, "the Department was one of the first branches of the military to successfully adopt the KM philosophy" and it was an experience-based example model. Thus, the model was drafted and developed by DON employees under the leadership of Jim Knox who at the time was the CIO of DON. The model was developed to serve as the KM framework for KM implementation in the entire DOD departments. Bennet, (2001, p.3) stated that "the main components of this model are technology, (enabling, facilitating, promoting innovations); content, (value, relevancy, currency; process, making explicit, capturing, categorizing, clumping, synchronizing, analysing, disseminating); culture, (Commitment, sharing, exchanging, building relationships); and learning, (building context, creating, growing, thinking strategically)".

4.5.1. Balance

The role of balance in the implementation of KM is to safeguard department's bias of concentrating on one feature/process neglecting others. It well documented that most organizations concentrated on technology (thus IT infrastructure) and neglect culture, processes, content, and learning. As KM initiatives are disseminated throughout the Navy Department, this model is intended to serve as a guide to guarantee that KMS (knowledge management systems) focus on the key elements which facilitate the creation and sharing of knowledge.

4.5.2. Culture

Organizational culture is one of the key elements of KM which underpins the practice and institutionalisation of Knowledge sharing, collaboration and building of professional working relationships. While all five spokes of the wheel are necessary to the success of the KM initiative, culture may be the most important. Unfortunately, culture is the most difficult to change. Culture is about the people up and down the Chain-of-Command and across

organizational boundaries. If the culture is one that people feel they need to hoard knowledge to receive a promotion or a more superior evaluation than their peers, knowledge sharing will never happen. On the other hand, if the culture is one that encourages the collecting and sharing knowledge through relationships developed on trust, then the only thing to do is work to facilitate the process.

As part of organizational culture, military/defence organizations create metaphors and stories from its history to promote the shared values necessary to sustain KM. Military and sports organizations have employed metaphors and storytelling to create shared values. The Department of the Navy also recognizes the value of storytelling and it encourages its use to promote KM. Storytelling is defined as the construction of fictional examples to illustrate a point, which can be used to effectively transfer knowledge. Conveying information in a story provides a rich context, remaining in the conscious memory longer and creating more memory traces than information not in context. Therefore, a story is more likely to be acted upon than normal means of communications. Storytelling, whether in a personal or organizational setting, connects people, develops creativity, and increases confidence. The use of stories in organizations can build descriptive capabilities, increase organizational learning, convey complex meaning, and communicate common values and rule sets.

4.5.3. Technology

This model emphasize that technology pillar is built on ICT infrastructure capacity to enable, simplify, empower, and promote practice and institutionalisation KM in the Department of Navy. According to Alex Bennet, (former CIO) in his conversation with Chatzkel, (2002, p. 435) about the implementation of KM at the Department of Navy, stated that they "recognised the value of technology to successfully achieve the goals and objectives of Department of Navy. Technological advancement provides warfare advantage". However, the model emphasized that ICT infrastructure/tools should be used as an enabler to facilitate, empower and promote the practice of KM throughout the organization.

Furthermore, the former DON CIO, Alex Bennet stated that one of the technologies they implemented they designed to assist them with the institutionalisation of KM CDRom, known

as Cport, which was distributed on request. They distributed over 17,000 CDRom to help in the implementation of KM across the organization and it was updated annually.

4.5.4. Learning

According to DON KM model, learning pillar is framed around building content, storytelling, creating, growing, experimenting, and establishing feedback loops. The model emphasized that learning take place through distributed knowledge system over time. Key areas of learning include includes among others knowledge creation, sense-making, innovating, and experimenting, learning plays a key role in changing the mind-set towards implementation of KM. The collaboration point needs to be set up to facilitate the learning process. Everybody learns in a different way. Some people are visual and need videos and pictures, where others want to talk to an expert, still others want to read explicit knowledge and internalize it. To this end, each of these methods must be included in the collaborative website.

4.5.5. Process

According DON KM model (2005) processes pillar incorporates codification of tacit knowledge into explicit through knowledge capturing, categorizing, mapping, analysing, and disseminating; and making it accessible (using ICT) throughout the organization. KM implementing requires consideration of the major processes that together make up what is now recognized as the KM discipline. Five key knowledge processes were highlighted as the building blocks of knowledge management, thus knowledge creation, knowledge storage, knowledge retrieval, knowledge transfer, and knowledge application. Each of these processes is supported by one or more ICT technologies, and each contributes to one or more knowledge application tasks.

4.5.6. Content

Content includes value, relevancy, currency, credibility, and expertise, while the process spoke incorporates making knowledge explicit by capturing, categorizing, mapping, analysing, and disseminating. The people that will turn to the Knowledge base will want to know that the information contained in it is the most relevant available. To this end a formalized content

review process must be developed. They need to trust that the content is accurate, relevant and timely.

4.6. Vision and strategy for KM and IM/IT for Health Canada

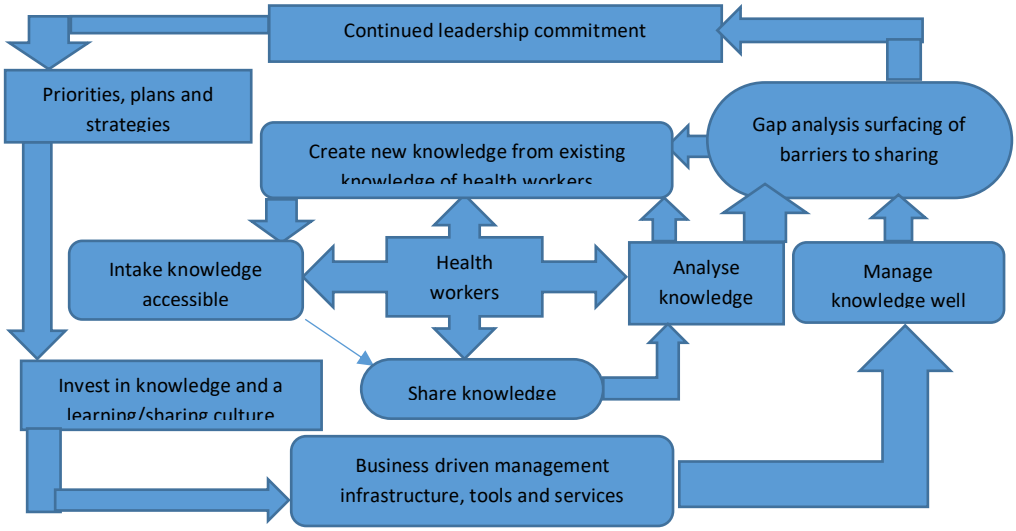


Figure 4: *Health Canada knowledge management framework*

Source*: Health Canada. 1998. Vision and Strategy for Knowledge Management and IM/IT for Health Canada.*

The development of Health Canada KM model was necessitated by Health Canada acknowledgement of the important role which implementation and practice of KM would bring to the legislative mandate of department, thus delivery of quality healthcare services. The model basically sets out the strategic plan and initiatives for building health knowledge base and institutionalises learning culture. Health Canada KM framework (1998, p. 5) described KM Health Canada "as per the adjacent text box, to provide a common understanding of the way in which knowledge management will be applied to meet today's needs and prepare people for a future, more knowledge-based health system and society". The model emphasized that Health Canada should act as a leader, initiator and partner to Canada healthcare organizations by analysing, creating, sharing and using health knowledge to deliver improved and quality healthcare services through KM processes and practice.

The rationale for adopting knowledge according to Health Canada KM model (1998), is to access and utilise knowledge that resides in the department (thus tacit – heads of staff) and in the relationships they created with their stakeholders, and in knowledge repositories (databases,

intranet etc.) to fulfil their legislative mandate of improving and maintaining health of Canadians. The implementation of KM is projected to support the department in meeting its obligations of delivering its legislative and operational requirements in line with department's business plan.

4.6.1. Health Canada KM model five principles

4.6.1.1. Committed leadership

According to Health Canada KM framework (1998, p.1) the department must demonstrate "leadership by valuing, analysing, creating, sharing, using and investing in health knowledge to improve and maintain the health of Canadians". This KM model, takes the alignment of KM model to distinctive characteristics of the organization to another level, thus it states that directorates (sub directorates) within Health Canada are required to develop their own KM model in line with their knowledge management needs. Moreover, it stressed the importance of stakeholder management wherein experienced health professionals from various sections of the healthcare sector will be encouraged to form COPs and networks to collaborate and work with the department to deliver quality healthcare services. Most importantly, this KM model advocated for leadership that is committed to KM purpose and objectives, and has the required knowledge and skills to develop, and institutionalise KM.

4.6.1.2. Health knowledge must be analysed, created and captured widely

Health knowledge will be analysed comprehensively and health decisions will be made on the basis of analysis; and health examination will be developed and treated as a discipline. Gaps in knowledge that emerge in the course of analysis will be identified and measures taken to ensure they are resolved. Research will be planned in a coordinated fashion and conducted to fill identified knowledge gaps and create analytical base for informed decisions.

4.6.1.3. Health knowledge must be easy to access

Health Canada KM model (198) emphasized the role and importance of creating an environment in which information is widely accessible. It stresses that existing knowledge must be identified, located and codified (using ICT tools knowledge maps, online databases and

many others). And knowledge maps will be used to locate and identify health professionals with specific expertise, skills and knowledge.

4.6.1.4. Health knowledge must be shared thoughtfully

The Health Canada KM model emphasize the need to capacitate health professionals to systematically analyse health knowledge in order to make evidence based health decisions. Knowledge must be captured and shared so that informed health decisions can be made, not only as a requirement for KM practice, but must be part of the employees KPA's (key performance areas. Health Canada KM model, (1998, p.10) states that "research will be planned in a coordinated fashion and conducted to fill identified knowledge gaps and otherwise create the analytical base for informed decisions". This model put more emphasises on and acknowledges the importance of research as the basis for informed decision making.

4.6.1.4. Health knowledge must be managed well

Health knowledge should be properly managed in line with the organization's strategic goals and objectives. Managers must take ownership of KM implementation, and institutionalise KM practices in their daily work, and capacity employees with the required skills of managing knowledge well.

Exercise committed leadership in valuing, analysing, creating, sharing, using and investing in knowledge.

4.6.1.5. Establish a Chief Knowledge Officer, accountable for the knowledge management function.

The Canada KM model (1998) just like NKMSF, (2016) recommends the creation of a CKO, to serve as a knowledge business specialist. The CKO would manage the incorporation of KM into health frameworks and initiatives, and as a reference on the implementation of frameworks and initiatives of knowledge management, and identify possible knowledge management initiatives or barriers to KM in the Canadian health sector.

4.6.1.6. Support knowledge management initiatives proactively.

Promote knowledge creation and sharing, promote knowledge and evidence based decision making. Encourage and support knowledge creation and sharing initiatives with an intention to improve and maintain quality health delivery to the people of Canada. Management should lead by example and demonstrate to everyone by adding value to KM processes (Knowledge creation, sharing, codification and integration) and be innovative and collaborate with co-workers and health stakeholders. The benefits of KM must be widely communicated and be added to orientation of new employees and incorporated into their job descriptions.

4.6.1.7. Invest in a sustainable and modular health info-structure.

Health Canada KM frameworks recommends that the department must assist Minister's Advisory Council on Health Info-structure, in conjunction with internal and external healthcare stakeholders by recommending to government of Canada to form a nation-wide health information system in order to improve evidence based decision making and accountability to Canadians. Health Canada KM model, (1998, p.14) states that "an info-structure allows greater integration across the continuum of care, encompassing promotion and prevention, and the various kinds of direct health care". If effectively used info-structure may contribute positively to KM across the whole Canadian health sector.

4.6.1.8. Value the knowledge, expertise and experience of health workers.

Communicate and clarify the benefit of institutionalisation of knowledge management centred on expertise and experience of healthcare professionals:

- Tell KM good stories;
- Empower employees to develop grassroots ideas on various ways and mechanisms to institutionalise KM
- Learning initiatives should include knowledge management content; and demonstrate on knowledge management should be institutionalised.

Create an enabling environment for knowledge creation and sharing; institutionalise the use of knowledge codification tools and the culture of knowledge sharing.

4.6.1.9. Evaluate progress in adoption of knowledge management culture.

Institutionalise effective use of health knowledge in the department's operations and KM related activities should be part of the department's performance appraisal process, and the impact of KM initiatives and operations of the department must assess timorously.

4.6.2. Create an integrated analytical and decision-making capacity.

4.6.2.4. Create a culture in which decisions are founded on evidence-based analysis.

Institutionalise the culture of research and learning phenomenon, and link health policy development, health research and HRD to promote a culture of making evidence-based decision making. Develop a policy/directive for the alignment and integration of research functions to support and capacitate the department to focus on health research through networked and integrated approach, wherein the findings and outcomes of research are operationalized in clinical/experimental practice.

4.6.2.5. Improve the department's capacity to analyse health system performance and outcomes.

Build and capacitate the department to create a body of techniques, and tools to support the development of health analysis as a discipline. Support the creation of techniques and tools which will be used to evaluate and analyse health systems efficiency and effectiveness. Generate measures and metrics similar to the ones used by other disciplines like economics and sociology, which will be used to assess the health system, and results of the decisions made on the health and well-being of Canadians, and which will assist the department in strategic long-term plans. Set up criteria to ensure the integrity and quality of evidence-based decision making.

4.6.2.6. Create an integrated analysis and research function in the department

Create conditions favourable to the creation of health related subject matter experts who will be responsible for in-house health analysis and research. Capacitate the experts with skills to package and distribute generated evidence, and clearly define their role in the day-to-day operations of the department

4.6.3. Make health knowledge easy to access.

4.6.3.4. Create knowledge maps.

It is the creation of an employee directory (also known as yellow pages) which used to classify and locate experts within the organization. It basically lists the experts' skills, experiences, area of research interests and most importantly their contact details. KM literature advocates that knowledge maps assists network of professionals in which technologies such as lotus notes database to make them visible and accessible which in turn encourages knowledge sharing and creation.

4.6.3.5. Adopt tools and protocols for sharing information electronically.

Build ICT infrastructure to enable access and exchange of information and set up standards which will ensure easier access (thus, search and retrieval). Implement related business processes to ensure knowledge is captured and used seamlessly in the course of day to day work. Use a business case approach in building the ICT infrastructure and implement instrument which will be used by managers in the department to identify employees who needs assistance in their line of duty such as technical, business, and HRD related.

4.6.3.6. Remove barriers to access.

Develop a policy and procedural framework which will be used to control access to the department's repositories and databases of information. And identify policies, procedures and cultural barriers to granting access and determine a barrier which makes it difficult to gaining access to information in the department. Develop standards for health informatics which will enable the development of national, electronic health records, accessible to health providers and facilitate development of national, researchers, policy makers and many others.

4.6.4. Manage health knowledge well.

4.6.4.4. Establish knowledge business specialists.

Primary responsibility for managing knowledge to support the core business of the department it belongs to, and should continue to belong to, the domain experts. Business experts know better than anyone else and what the business is all about, and, by extension, what knowledge is required to achieve and deliver the required results. The role of experts is to help the organization to execute specialised functions. These experts are valuable not only because of their specialised knowledge, but also because they maintain an overview of their particular area of expertise. For example, a computer specialist knows what technology is in place in the department, what its functionality is, who is responsible for it, and what the larger technology trends in the world are.

4.7. Comparative analysis of the four KM frameworks

Features	Inukshuk KM model	DON KM strategy	Canada Health	DPSA KM framework
Department	Canadian Department of National Defence	USA Department of Defence: the Department of Navy	National Department of Health	The Department of public Service and Administration
Strategic approach	Commitment from leadership Government led initiative	Commitment from leadership Government led initiative	Commitment from leadership. Government led initiative.	Lack of commitment of leadership. DPSA led initiative
Origin/Roots	Synthesis of past research and an empirical study. Field research. Case study	Practical organizational experience Field research	Case study Field research Consulting experiences	Synthesis of past research Consulting experiences
KM Pillars	Leadership Culture Process Technology Measurement	Content Technology Process Culture Learning	Committed Leadership. Health knowledge must be analysed, created, and captured wisely. Health knowledge must be easy to access. Health knowledge must be shared thoughtfully. Health knowledge must be managed well.	Culture and leadership People Content Process Technology
Unique features of the model	Excellent model of Defence knowledge. Well-known symbol in Canada and play important role in their history and tradition. Inukshuk resemble people, people plan an important role in implementation of KM. While Inukshuk are similar, they nonetheless distinct from one another, thus KM implementation for every organization.	Developed change strategy. Created a shared/common vision on KM. Created metrics guide for KM initiatives.	Since late 1990's the Canadian government endorsed KM as a primary way of improving health services and strengthening the healthcare services. Health Canada developed the integrated KM framework that involves extensive use of KM benchmarking.	Spearheaded by DPSA instead of individual government departments
Impact after Implement-ation	Successful and most cited public sector KM framework	Successful and recognised as the world leader in the implementation of KM in the public sector.	Used workshops such as knowledge management 101 to raise KM awareness	Not yet approved to the South African government departments KM framework

Table 4: Comparative analysis of knowledge management frameworks

4.7.1. The Draft DPSA KM Framework

The Draft DPSA KM framework has been developed by the DPSA knowledge management division as an official blueprint for all the government institutions (thus, all departments, provincial and local governments) to adopt, implement and institutionalise. The department has since 2001 drafted three KM frameworks which were not approved to become the official transcript for the adoption and implementation of knowledge management. Notably, there's no evidence to suggest that this KM framework has been implemented therefore its impact/influence in the South African public sector is unknown.

4.7.2. The three international knowledge management frameworks

4.7.2.4. Inukshuk KM model

This model was pioneered and spearheaded by Professor John Girrard, working together the employees of the Canadian Department of National Defence. The framework was designed in line with the distinctive characteristics of the department thus, knowledge purpose, knowledge processes and enabling context.

The framework was widely accepted as the department's strategic plan for the adoption and implementation of knowledge management, and this one of the most cited public sector knowledge management framework. The framework was successfully implemented, because among other reasons Inukshuk is a well-known symbol which plays an important role in the history and tradition of Canada. Inukshuk resemble people, people plan an important role in implementation of KM. Although Inukshuk are similar in structure, they are nonetheless distinct from one another, thus KM implementation for every organization.

4.7.2.5. DON KM model

This framework was initiated and commanded by the Chief Information Officer of the Department of Navy Jim Knox, working together with department's foot soldiers. The model was developed to serve as the KM framework for KM implementation in the entire DOD departments. The department partnered with APQC (American Productivity and Quality

Center), IKM (Institute for Knowledge Management), and many other government departments and private organizations to draft their KM framework.

The department developed change strategy which orchestrated the implementation of shared vision, building the business case, demonstrating leadership commitment, facilitating a common understanding, setting limits, sharing new ideas, developing the infrastructure, incentivizing, promoting learning, etc. Moreover, the department leadership created a shared vision in line with Peter Shenge's (the fifth discipline) which emphasizes the importance of a shared vision where employees participate in the development of a corporate vision, and can then make decisions and take actions consistent with the directions set by senior leadership through the shared visioning process. Furthermore, they used systems thinking model derived from Peter Shenge's learning organization to develop their knowledge management model.

DON issued a Metrics Guide for KM Initiatives. The guide concentrated on three (3) types of specific measures to monitor KM initiatives from different perspectives, thus outcome metrics, output metrics and system metrics. The model was recognised by computer world (2001) as the world leader in the implementation of knowledge management in the public sector. Just like the Inukshuk KM model, it is one of the most cited public sector knowledge management framework. The USA DoD supported the use of KM principles and methodologies to improve war fighting and business processes.

4.7.2.6. Canada Health

This framework was penned by the internal committee in Health Canada chaired by Alan Nymark, the committee was commissioned to develop, implement and institutionalise the practice of knowledge management in the department. Health Canada recognised the central role of KM in improving the health system. There are quite a few strategic initiatives which Health Canada established to assist in successful implementation and institutionalisation of KM in the department. Thus, developed knowledge culture and created Chief Knowledge Officer to improve and implement the KM framework and lead knowledge culture initiatives. Conducted research and created internal capacity (through seminars, conferences, publications, reports etc.) and provide enterprise information management and information technology services by developing and maintaining architectures, infrastructure and tools.

Health Canada is recognised as one of the front runners in the implementation and practice of knowledge management in the public sector healthcare sector. Since late 1990's the Canadian government endorsed KM as a primary way of improving health services and strengthening the healthcare services.

Chapter 5: Knowledge Management in the public sector

5.1. Introduction

The chapter summaries the emergence of knowledge management in the public sector and acknowledges that knowledge management was first adopted and implemented by the private sector, history shows that most of the management philosophies were first adopted by the private sector. An example includes among others the total quality management (TQM), business process re-engineering (BPR) and enterprise resource planning (ERM). As with the other management philosophies, the public sector has over the years began to embrace and implement knowledge management. The public sector has over the past two decades realised the importance of KM, to its policy-making (strategic planning), in order to render quality service delivery to the public. This chapter outlines the emergence of KM in the South African public sector and summaries the journey which DPSA took in the adoption and implementation of KM.

The adoption and implement of KM has proven to be very difficult for the public sector, due to among others the use of unsuitable knowledge management frameworks. Knowledge management frameworks for implementing KM must be carefully thought-out in line with distinctive characteristics of the organization. There are concrete issues for the public sector to contemplate and resolve before implementing KM. This chapter use Newell's theoretical framework (thus, knowledge purpose, processes and enabling context) to demonstrate that although South African government departments (the NDoD & MV and NDoH) are deemed to be similar in structure (hierarchy) and functions (service delivery), they are in fact unique and complex, with distinctive organizational characteristics. Furthermore, the two departments were used to demonstrate that when adopting and implementing KM in a government department, each government department is required to design its own knowledge management framework, in line with its unique, complex and distinctive organizational characteristics. The chapter concludes by outlining the similarities and differences between the two departments.

5.2. Knowledge Management in the public sector

According to KM literature, KM started in the private sectors of the first world countries such United States of America, Canada, and Japan around the 1990's. This claim is evident in the (OECD, 2003)KM survey report of 20 countries and 132 departments/ministries/agencies which states that with few exceptions public sector leg far behind the private sector organizations in the implementation of KM. The advent of KM was initially met with a fair degree of criticism, with many scholars arguing that it is yet another buzzword that would quickly pass into ancient history. Instead, KM has grown from strength to strength and established itself credibly as academic disciplines of study and a professional field of practice and one of the reasons why it was so successful is the work done on theoretical or conceptual formulation and construction of KM models.

There's significant literature in the study of the use of KM in both private and public sector, McAdam and O'Dell (2000) in the study of perceptions and the use of KM in private and public sectors stated that both sectors acknowledge and endorse the benefits of KM as improved quality, effective and efficiency, learning organizations, and better products (or services). Most of KM literature views the role of KM in the public sector from an organizational perspective, same as in the private sector. This view addresses public sector objectives focusing on aspects such as efficiency, effectiveness, and productivity.

5.3. South African government departments adoption and practice of KM

The South African national government departments are according to the constitution given the responsibility of public administration (various departments) making policies and laws of managing the country and most importantly delivery of public services to the general public. This information has the form of legal acts published in gazettes, information sheets/brochures that are published for the assistance of citizens in their transactions with public service or public records created, circulated and maintained by public service as evidence, documentation and information concerning their activities and transactions.

Service delivery is the ultimate goal for all public sector organization, and South African government departments are no exception. There's a school of thought which links quality

service delivery processes with knowledge management, therefore this study subscribes to the view that most important efficient and effective functioning and management of government (public service) rests on effective implementation and practice of KM in the public sector.

5.4. The DPSA's role in the adoption and implementation of KM

According the NKMSF, (2016) the South African government acknowledge that knowledge in modern public sector organisations is an essential and strategic resource, and its use has become a global practice to reform the way governments serve their citizens. Hence, in 2001/2002 financial year, the DPSA, in partnership with Department of Communications, Department of science and technology and other research institutions such NRF and CSIR began to test the suitability of KM in the South African public sector. The DPSA is responsible for formation of uniform norms and standards which support an improved efficiency and effective public service delivery in accordance with the public service act, (1994) and public administration management act, (2014) and therefore the implementation of KM in the South African public sector organizations is part of its responsibilities.

According to Munzhelele, (2012) the DPSA has been at the forefront of the implementation and institutionalisation of KM in the South Africa public sector since 2001, and it is supposed to supports government institutions in developing a platform for knowledge sharing and dissemination across the public sector. In championing the implementation of KM, the DPSA introduced a number of KM initiatives such as road shows, KM indaba, and notable in 2003, the DPSA introduced the KM Learning Network with the ultimate goal of entrenching a culture of KM in government institutions. The purpose of the KM learning network was to educate public servants about the importance of KM in the public sector and keeping them abreast of global developments in the field of KM. The objective of the learning networks was to introduce the market and familiarise public servants with KM phenomenon, and discuss the benefits KM can bring to the South African public sector. Furthermore, Matomela, (2004) indicated that there are various KM initiatives which the DPSA introduced to support the introduction/adoption and implementation of KM in government organizations which among others includes knowledge information management work group within GITOC, learning Networks and Communities of Practice, KM champions in provinces and government departments, KM implementation guides and manuals, public service KM practitioners study

tour to Canada, road shows targeting senior managers and ICT practitioners, technical support to provinces that are developing their KM and innovation strategies and many others.

Up to this far, the DPSA have drawn three drafts KM frameworks, thus Learning and KM Framework (2003), draft National KM Framework (2011), and draft national KM strategy framework: A Public Service Guide (2016), unfortunately none of these KM frameworks have been approved to be an official KM framework or adopted as KM policy. In essence, the South African government does not have an official national KM framework/strategy or an official guideline on the implementation of knowledge management. One of the most visible foot print and successful efforts by the DPSA for implementation of KM in the South African public sector is making knowledge management a mandatory competency for all senior managers which were introduced through the SMS handbook.

5.5. Selected South African government departments and rationale for selecting NDoD & MV and NDoH

5.5.1. National Department of Defence and Military Veterans

NDoD & MV is the government department responsible for both the defending the country's sovereignty and providing support to foreign policy initiative to ensure peace and security throughout the African continent. It is a knowledge intensive organisation whose mandate is delivered from the basic right of every nation to defend itself from any form aggression (such as terrorists' organization, coup) and protection of its sovereignty; and providing support to foreign policy initiative to ensure peace and security throughout the African continent. It derives its mandate primarily from the constitution of the republic of South Africa, defence act no. 22 of 2002, and delegated legislation.

The NDoD and MV has a hierarchical structure with a strict command system, it consists of the ministry of defence, the defence secretariat and the SANDF. The minister of defence is the executive authority, the Secretary for defence is the accounting officer and head of the department and the chief of the SANDF are responsible for the command and control of the SANDF. The Secretary for Defence and the chief of the SANDF has two separate reporting lines, and the department divided into eight (8) directorates thus, South African military health

services, army, air force, corporate staff division, navy, defence intelligence, joint operations division and joint support division which all constitute the South African Defence Force.

Military organization complex and distinctive organizational characteristics includes among others cultural/social (practices that promote hiring people with similar cultural values), legal (copyrights, classified vs. non-classified information, patents), technical (security safeguards), and structural aspects which require special consideration in making decisions regarding implementing knowledge management program. There's a great deal of literature recognizes that the NDoD & MV is a unique department which have different KM challenges and needs. There are notable country's military/defence departments which extensively adopted KM with great success, such as United States of America, Britain, Canada, Australia, Japan, Korea and Singapore just to name but a few. The United States Department of Navy KM model and the Inukshuk KM model are widely accepted as recognisable and successful models for defence organizations.

This study advocates that, success or failure of knowledge management in an organization depends on strategic knowledge management purpose chosen. It is the contention of this study that each directorate within the department of defence must develop its own knowledge management framework/strategy appropriate to their specific knowledge management purpose and knowledge processes applicable to their directorate unique characteristics. There are notable country's military/defence departments which extensively adopted knowledge management with great success, like United States of America, Britain, Canada, Australia, Japan, Korea and Singapore to name a few. The United States Department of Navy knowledge management model and the Inukshuk knowledge management model are widely accepted as recognisable and successful models for defence organizations.

5.5.2. Knowledge purpose, knowledge processes and enabling context at NDoD& MV

5.5.2.1. Strategic knowledge purpose: Knowledge exploration and knowledge exploitation

Due to the adaptive nature, complexity and uniqueness of the NDoD& MV, the department when choosing the KM purpose for the organization should opt for ambidexterity, thus the balance between knowledge exploitation and knowledge exploration. Several studies confirm the positive benefits, with respect to firm performance, of employing an ambidextrous

organizational strategy. Rothaermel and Deeds (2004) also find that performance improves if organizations employ an ambidextrous strategy. In his seminal work on exploration and exploitation, March (1991) cautions against the danger of focusing exclusively on either exploration or exploitation, and suggests that a balance between the two modes of knowledge creation may be more appropriate. Simply put, too much knowledge exploitation binds the organization to impending frame breaking changes in its environment and cripples it when the changes do occur. Whereas too much knowledge exploration won't pay the bills fast enough because almost by definition a lot of effort will be wasted before effective answers or operational formula can be found. To paraphrase Bener and Tushman (2003, p.242) "an organization's dynamic capabilities depend a simultaneously exploiting current technologies and resources to gain efficiently benefits and creating new possibilities through exploratory innovation". Organization get into trouble when they invest excessively in knowledge exploitation, for example, the US NDoD knows a great deal about war fighting, as its two military victories in Iraq in 1991 and 2003 demonstrate. What is new quite painfully obvious in the aftermath of the war, where NDoD exploited the knowledge it had, the NDoD knew far less about nation building and the creation of vibrant civil societies. The NDoD has since been playing catch-up, including exploring new needed knowledge. The fact that the DoD and the White house officials in the George Bush administration failed to appreciate the need for such planning for post war resulted in thousands of needless deaths and a terrible waste of financial and other resources. In other words, needed knowledge exploitation did not occur prior to the innovation.

5.5.3. Knowledge processes and enabling context at National Department of Defence

5.5.3.1. Knowledge creation and knowledge sharing

Powell, et al. (1996) stressed that, when the knowledge of an industry is expanding and complex, the sources of expertise (knowledgeable experts) will be widely dispersed. This is applicable to the NDoD& MV, its knowledge creation and sharing is diverse and at times dependent on its many stakeholders, (as indicated in table 4), related military organisations. This means that the locus of knowledge creation is centred on cooperation with other local and international military using what Newell, et al. (2009) labelled as enabling contexts thus, networks and networking, community of practice. No single organization can internally source all the required knowledge and expertise to effectively management taking into consideration

that it operates in an area wherein there's always some form of internal and international threats. This view is confirmed by volumes of literature on military organizations, which have noted the increasingly networked nature of knowledge creation sharing. Thus, in the defence/military domain, a whole range of different types of organizations are involved in assisting the NDoD& MV in knowledge creation processes, including academic institutions, regulatory authorities, small and medium-sized dedicated military organization.

This study used military knowledge management cycle Sensoy, et al. (2005) to demonstrate how military organization create and share knowledge.

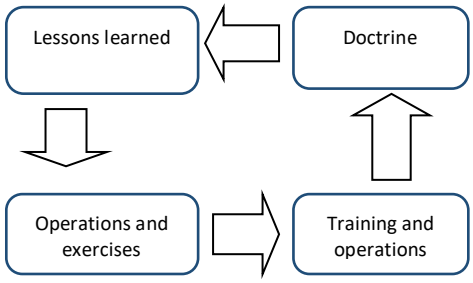


Figure 5: *Military knowledge management cycle*

Source*: Sensoy, S. E., et al. 2005. Knowledge management in military organizations: Applications of knowledge creation and knowledge transfer*

According to Sensoy et al. (2005) military organizations used what they referred to as military knowledge management cycle for knowledge creation and sharing. They stated that military organizations use manuals, doctrines and other publications, and by using these, during training and education, explicit knowledge is expressed to the troops. Historically, one of the most important duties of armed forces is to be ready for any given situation. Therefore, training and education proceed during peacetime, according to the missions that the armies will take in a possible warfare. Moreover, nowadays armed forces participate in safety and peace promotion support operations, counter-terrorism, humanitarian assistance, stability operations, counter-insurgency etc. that called as "military operations other than war". At that period both in training and military operations explicit knowledge, defined in the doctrines are internalized, and as a result of these activities new tacit knowledge evolves. Finally, as the learning organizations, after military operations and exercises lessons learned contribute critical

knowledge to the military organizations. This cycle simply summarizes knowledge creation and sharing in military organizations.

There are numerous methods which military organization use for knowledge creation, only three has been covered, thus communities of practice (CoP), gaming and couching and mentoring. Community of practice can simply be described as an organic and self-organized group of individuals who are dispersed geographically or organizationally but communicate regularly to discuss issues of mutual interest. Within communities of practices (COPs) soldiers can engage with one another and learn from each other's expertise and their experiences on specific areas of interests and these processes help the military organizations with knowledge creation.

Gaming is one of military organisations knowledge creation distinctive characteristics. The current level of computer gaming technology, armies uses simulations in almost everywhere for reducing cost and making the military personnel live the similar conditions to the real situation. Such kind of activities is a must for military organizations, since activities in military may cause serious problems, because of its hazardous nature. An outstanding example of game for knowledge creation is Virtual Battle Space 2(VBS2), used by U.S. Army, U.S. Marine Corps, Australian Army and Canadian Forces and many others. VBS2 is a game-based training platform that incorporate, virtual environment, numerous simulated military entities, different terrain areas and hundreds of scenarios. In this game radio talks are recorded during gaming phase, and these are played back in After Action Review. That process let the military personnel learn from mistakes. Another crucial feature of this game is allowing the units to visualize the battle space and have tactical level experience by replicating the real scenarios.

According to military organizations literature counselling, coaching, and mentoring are considered as some of the tools used by a leader to provide feedback and share expertise and experience with other members of military personnel. Sensoy et al. (2005, p.22) "emphasized that couching and mentoring, in military organizations is so hard to have experience without living warfare conditions or what is better known as hands on experience as a military organizations use experienced professional coach or mentor to transfer their tacit knowledge which might be transferred to inexperienced military personnel". Military organizations codify their knowledge in manuals, doctrines which serve as guides or source of instructions for

operational operations. The explicit knowledge embedded in these distinctive documents is transferred to the troops on the ground through training and education. In operational situations, training is used as one of the core operational activities in military organizations.

Professional Interviews is one of the essential technique which has been used by military organization to capture, preserve and share operational military knowledge experiences and expertise after activities such as trainings, workshops, etc. The main purpose of professional interviews is to share knowledge with the directorates (and sub-directorates) in an organization. Interviewing is a flexible technique that can be adapted almost all situations. And also it is an effective way of eliciting knowledge about complex matters. Since, many people tend to keep some critical point to themselves, no matter what the reason is. At this point, the interviewer should manage the interview according to the real purpose.

Lessons Learned, the history of warfare is as old as the human being's history. Therefore, during that time, military organizations have always learned from achievements and mistakes in warfare, and updated their strategies, tactics and organizational structure. So it is possible to say that, lessons learned have a long history. And it is one of the most important knowledge creation techniques of military organizations. The aim of a lessons learned process is to learn from experience and to provide certified justifications for upgrading the existing way of doing things, in order to improve performance, both during an operation and for subsequent operations. According to military organizations literature military organizations generally institutionalize lessons learned. In this process, what is experienced in an operation or exercise is turned to explicit knowledge, and it is disseminated to all military personnel and directorates and sub directorates (Sensoy, et al., 2005).

5.5.3.2. Knowledge codifying

Military and security cluster literature advocates that an important means of effective management of knowledge flows in military organization is the codification of knowledge. When organizations codify knowledge they package it into formats which facilitate knowledge transfer. Knowledge codification can be accomplished in a number of ways in military and security organizations such as encoding of organizational knowledge in formulas, codes, expert systems, spec sheets, budget information; expressing knowledge in natural and common

language such as reports, memos, or policies, embedding knowledge in technologies such as the intranet, expert or expertise directory, portals, collaborative system and many others.

Military organization strategy/approach to knowledge codification is through codifying doctrines, instructions, manuals and other publications. Such an approach enables military organizations to provide clear guidelines for all the members from rank-and-file soldiers up to general officers. The codification of operational data and procedures supports coordination between units (directorates and sub directorates), the components of armed forces (e.g. land forces, air forces, navy, marines) and the national contingents of coalition or alliance member countries. Nevertheless, in highly turbulent environments, it is a real challenge for military organizations to keep their doctrines updated. For instance, during military operations when tactical innovations must be captured and disseminated very quickly, lessons learned are translated directly into changes in training programs or even in the way of conduct.

For the knowledge codification purposes the NDoD& MV or military organizations in general use official lessons learned databases which they used to integrate lessons learned for organizational improvement and later these lessons, observations and insights are used to modify tactics techniques and procedures which help to solve tactical problems. Lessons learned databases help military organizations to easily access doctrines more easily and connects operational units with subject matter experts and peers with relevant experience to get assistance, both before and during the operation.

Newell, et al. (2009) highlighted common language as one of the important enabling factors of the overall knowledge codifying process. Language is important in terms of creating shared understanding among workers and their relation to the wider generation. Conceptually, the knowledge codifying in military context is about connecting those who know with those who need to know (know-why, know-what, know-who, and know-how) and leveraging that knowledge across the military organisation by codifying doctrines, instructions, manuals, research reports etc. and making it easily accessible through ICT. Thus, in today's modern military management, military organizations use knowledge codifying systems to enable the army personnel to gain quick online access to important army information, news, research reports, instructions, etc.

5.5.3.3. Knowledge integration

Knowledge integration in defence/military literature stresses the involvement in the innovation process of different groups (army, navy, air force and maritime) including the support staff (thus managers, professionals, scientists and technicians) from the department's directorates and sub-directorates as well as stakeholders who each have developed distinctive perspectives or worldviews which inform their practice and shape their interactions with other groups. The key in relation to interactive innovation is that these different groups are able to integrate their knowledge. This is because innovation relies not simply on the availability of new knowledge, but also on the ability to integrate knowledge across an increasingly distributed range of professional groups and organizations. In contrast to knowledge sharing (in which groups come to appreciate and share each other's perspectives Grant (1996), emphasized that knowledge integration is the combination and deployment of knowledge drawn from different domains in order to achieve specific innovation outcomes (e.g. the development of a new product or process). This concept builds on, and extends, Okhuysen and Eisenhardt (2002) definition of knowledge integration as a process, whereby individuals combine their information to create new knowledge.

Unfortunately, most of the work to date which has recognised the need to integrate dispersed knowledge has focused on the structures of networks that will facilitate this. Networks are viewed as the 'channels' or 'pipelines' through which knowledge is transferred (Owen-Smith & Powell, 2004). These structural accounts thus tend to neglect the agency involved in the formation of networks, their dependence on trust and social capital (Newell and Swan, 2000; Gupta et al., 2003), and their implications for knowledge integration rather than transfer. As Steward and Conway (2000, p.285) note; whilst the "configuration and membership of a network is important, it is the process of networking that releases the 'potential' of the network". The ultimate goal of knowledge integration in the department of defence perspective is to capture and integrate organizational knowledge to gain an advantage over the enemy, and create an environment in which integrated processes, best practices, and operations designed and structured to enhance and institutionalise collaborative and innovation enabling capabilities for the department, which in turn will accelerate decision-making capabilities and enable superior battle space awareness through boundary less sharing of intellectual capital.

Nahapiet and Ghoshal (1998) argue, exploring knowledge integration essentially involves examining the social networks through which knowledge is exchanged/shared and combined/integrated. It involves understanding the micro-social interactions among individuals. Thus, employees of an organization need to network among themselves and other stakeholders to make sense of organizational processes (current and potential) and operational goals. In doing this they will be drawing upon their collective social capital, that is, the information that can be accessed through the social networking activities of the different team members which will allow the seamless sharing of data and facilitate large scale advanced horizontal and vertical collaboration for planning and execution.

5.5.4. National Department of Health

The NDoH has an overall responsibility of the department is the provisioning of quality healthcare services and promote access to quality healthcare services. The department's priority is to improve the health status of the entire population and to realise its vision of a long and healthy life for all South Africans. The department strategic plan consists of four strategic outputs thus, increasing life expectancy; decreasing maternal and child mortality; combating HIV and AIDS and decreasing the burden of tuberculosis (TB); and strengthening health system effectiveness. These strategic areas are consistent with the health related millennium development goals (MDGs), which the United Nations (UN) expects nations of world to achieve.

5.5.5. The structure of the National Department of Health

The NDoH is divided into six directorates thus administration which comprises five sub directorates thus, ministry, management, financial Management, office accommodation and corporate services (human resource management, legal services, and communications). Its main purpose is to provide overall management of the department and centralised support services. The NDoH derives its mandate from the national health act 61 of 2003, which requires the department to provide a framework for a structured and uniform health system within South Africa. Healthcare services in South Africa are delivered across three spheres of government thus national, provincial and local. Its main mandate is to improve the health status of South Africans through the prevention of illnesses and the promotion of healthy lifestyles and to

consistently improve the health care delivery system by focusing on access, equity, efficiency, quality and sustainability.

In practice, the role of the NDoH focuses on legislation, policy, norms and standards, and ensuring equity and delivery of health services. According to the NDoH annual report of 2015/16 financial year, South Africa healthcare is still under pressure and battles to deal deadly but controllable diseases and medical conditions such as HIV and AIDS and tuberculosis, high levels of maternal and Child Mortality; non-communicable diseases; and injuries and trauma, it is imperative to ensure quality healthcare service delivery across all healthcare entities. Due to high levels poverty many people do not have medical aid plans and health insurance, and therefore cannot access the sophisticated and often expensive private healthcare systems. As a result, they rely on public health facilities to access health services. Sections 27 and 28 of the Constitution of the republic provide for the right of access to health; therefore, healthcare services should be available and accessible to all who need them, regardless of their socio-economic and geographical location.

The health care industry is knowledge intensive where experience, expertise, skills and tacit knowledge play a significant part in delivering of efficient and effective health care to the general public of South Africa. Public service healthcare delivery in itself is a setting where different professional groups having differing rules, job representations, and professional behaviours engage in a collaborative process, with both explicit and tacit knowledge aspects, to deliver accessible, quality and cost effective healthcare. The South African healthcare is one of the most complex sector in the country; it relies on cooperation of many health care professionals (such as family physicians, specialists, nurses, radiologic technology technicians, lab technicians, social workers, psychologists, counsellors.) to deliver quality healthcare services. It also involves third parties such as hospital and clinic administrators, managers in finance, human resources, health care ministry, drug companies, health care insurance companies, activists' groups, education organizations, research communities. The other factor which differentiates healthcare delivery organizations from NDoH & MV is that its work is variable and complex and at times it can be of an emergency or non-deferrable in nature.

5.5.6. Knowledge purpose, knowledge processes, and enabling context NDoH

5.5.6.1. Strategic knowledge purpose: Knowledge exploitation and knowledge exploration

In a context of escalating expectations for quality healthcare services, innovation of current operations is a major concern for the NDoH and healthcare practitioners/organizations in South Africa. Provisioning of quality health services and improvement of operations in healthcare delivery can be best achieved through the combination of knowledge exploitation and knowledge exploration; March, (1991) referred to this combination as organizational ambidexterity. It captures a process of managing (or reconciling) trade-offs in a manner that enables an organization to exploit existing capabilities to refine practice, while at the same time invest resources towards exploration activities in order to ensure long term survival in the face of external pressures. Organizational ambidexterity in the context of NDoH is the department's ability to simultaneously use and develop existing knowledge to refine practice (exploitation), as well as generate new knowledge through knowledge search and experimentation to advance existing frontiers of best practice (exploration). Knowledge exploration allows the NDoH to draw upon best practice evidence from latest scientific advances, in the form of new research papers, and national guidelines, recommendations and alerts, which are envisioned to stimulate innovation to broaden the department's knowledge base and best practice. Second, the NDoH needs to exploit the tacit knowledge embedded in frontline practice that produces nuanced understandings of the quality problem and potential solutions, and pull these upwards for a system level effect across the organization, refining practice to reduce costs, and improve service quality. The department have to focus on innovation and change on the one hand (requiring knowledge exploration), whilst on the other, high levels of basic care must be standardized, refined and developed (requiring knowledge exploitation).

The South African healthcare is facing significant pressures in light of an exponential increase in the number of medical challenges, changing diseases profile, HIV and aids, and tuberculosis, climate change, rapid population growth, to which NDoH have to respond. In other words, the NDoH must both "handle stability and manage change", using both existing knowledge and capabilities, and through exploring new and innovative ways of doing things. As they face trade-offs and ambiguities, they are expected to deal with any emergent contradictions and coordinate the necessary trade-offs between exploration and exploitation.

5.5.7. Knowledge processes and enabling context at NDoH

5.5.7.1. Knowledge creation

Knowledge creation in a healthcare based institution like the NDoH is typically an activity which is accomplished through a collective process rather than individuals working alone due to the nature of healthcare service delivery. Thus healthcare is knowledge based industry in which experience and tacit (intuition) knowledge play a significant role and requires expertise from different fields of discipline. Accordingly, Newell, et al. (2009, p.79) states that "knowledge creation is typically the outcome of bringing different types of knowledge together by involving a number of individuals from different professional and disciplinary backgrounds and often from different organizations in a collaborative effort of some kind". Healthcare delivery in itself is a setting where different professional groups having differing rules, job representations, behaviours and value coverage engage in a collaborative process, with both explicit and tacit knowledge aspects, to achieve outcomes in terms of access, quality and cost. Thus healthcare is delivered by a team of healthcare professionals wherein each specialize in a single aspect of healthcare.

The NDoH knowledge creation heavily depended on inter-organizational networks, and external healthcare organizations which are characterized by a range of external stakeholders and regulatory agencies with healthcare knowledge in the form of guidelines and performance targets. Several researchers have noted that the transfer of knowledge among healthcare professional (such medical experts, doctors) is dependent on professional networks and communities of practice.

5.5.7.2. Knowledge sharing

The NDoH have an oversight responsibility in the healthcare sector have over the years developed and implemented various policies to ensuring quality healthcare delivery. As already stipulated, healthcare environment consists of different groups of people with different expertise, experiences, values, etc. As healthcare delivery is a collaborative effort, professionals working in healthcare facilities must share their experience, ideas and expertise to ensure quality healthcare delivery. Knowledge sharing among healthcare professional is essential for ensuring best practices and continuity in healthcare delivery. KM literature on

public health stipulates that COPs and networks provide a new pathway for health professionals to share evidence and new knowledge between the various different specialized healthcare professionals (doctors, medical experts, technicians, etc.) that are members. CoPs and networks thus provide a mechanism for the different professional groups that exist within a healthcare organization, to leverage on their tacit knowledge base. They are a great platform in which knowledge is shared, used and valued in decision making and action planning between agencies, professional groups. Several researchers have noted that the transfer of knowledge among healthcare practitioners (physicians, nurses, technicians) is dependent on professional networks and communities of practice.

The NDoH relies heavily on what Brown and Duguid (2001) referred to as intra- and inter-organizational distributed networks of practice for both knowledge creation and sharing, thus intra-organizational networks belong to the same organization, participants in inter-organizational networks cross boundaries of two or several organizations. An intra-organizational network of practice is an ICT facilitated dynamic relationship of geographically dispersed participants who share and create knowledge related to their daily work practices and organizational problems. The network constitutes an inter-community structure consisting of multiple co-located communities where participants belong to a co-located community as well as the distributed network, and knowledge sharing occurs between dispersed participants crossing different practices and geographical locations. The networks and networking support knowledge sharing activities and rich communication activities within communities by providing them with communication tools such as email, videoconferences, intranet tools and other groupware applications.

5.5.7.3. Knowledge codifying

The NDoH is unique and complex South African government department, which works with several stakeholders in diverse fields that requires collaborative work in order to deliver quality and effective healthcare services to the general public. The healthcare sector is a highly knowledge intensive, and record vast amounts of operational data. Efficiency and effectiveness of healthcare necessitate seamless knowledge codification that enable and support decision-making and interaction between different healthcare professionals within the department and its healthcare network.

Due to the nature and complexity of healthcare and high volumes of data/information which the department handles for operational purposes, the NDoH use advanced and sophisticated knowledge codification tools which assist the department in managing internal and external knowledge and the conversion of this knowledge in an accessible and usable form using information technology and information management skills. Moreover, codified knowledge is accessible in various forms including printed documents and electronic documents (such as health portal, software algorithms, clinical practice checklists). Codified knowledge which mostly used by the NDoH and healthcare stakeholders/organizations includes scientific research outputs, clinical guidelines, and operating manuals. Most importantly, the principal goal of knowledge codification is to enable the re-use of explicit knowledge at a specified time later depending on the user's need while optimising the accessibility of this knowledge at a widespread level. According to KM literature this strategy can prevent knowledge loss as well as remove duplication of efforts in looking for solutions that are already available (reinvent a wheel) in the organisations.

Alavi and Leidner, (2001) highlighted codification tools and technologies which support codification process such as knowledge databases, advanced computer storage techniques; sophisticated retrieval techniques such as query languages, multimedia databases and database management systems which are mostly used in the healthcare industry. For an example a good thesaurus will connect the researcher's terms with the categoriser's terms and facilitate searches in the database. Intelligent tools and technologies such as artificial intelligence, expert systems, neural networks, fuzzy logic, genetic algorithms, case-based reasoning, agents and knowledge discovery database, capture and codify the knowledge of the community. Collaborative and communication technologies and groupware enables organisations to create intra organisational memory in the form of structured and unstructured information that shares memory across time and space. The NDoH and public sector organizations are synonymous encoding of organizational knowledge in formulas, codes, expert systems, ``spec sheets,'' or budget information; expressing knowledge in natural language formats, such as reports, memos, or policies; embedding knowledge in physical objects, such as prototypes or technologies, or even depositing it in employees who visit or rotate between different directorates and sub-directorates.

5.5.7.4. Knowledge integration

The NDoH is a large multidimensional, complex and dynamic organisation that works with a number of key local and international stakeholders in the health sector (thus researchers, academia, WHO, CSIR, NRF and many others). The department rely heavily on incorporating and integrating their vast wealth of health knowledge from all these stakeholders in order to render its mandatory and constitutional responsibilities thus provisioning of quality healthcare service. Even at inter-organizational level, healthcare environment is characterized by a range of external stakeholders and regulatory agencies, who issue patient safety knowledge in the form of guidelines, performance targets and many others. According to knowledge integration literature, in order for the NDoH to support the integration of heath related knowledge, it requires intense knowledge exchange and sharing among healthcare stakeholders to reach greater potential of knowledge integration. The key in relation to knowledge integration is that different medical professional groups from the different parts of the healthcare sector come together to integrate their knowledge. This is because knowledge creation and sharing does not only depend on new knowledge; it similarly depends on the capability to integrate knowledge throughout increasingly distributed groupings of knowledge professional/groups and organizations. Grant, (1996) posits knowledge integration underline the combination knowledge professionals/experts from different fields/sectors collaborating in order to achieve specific set innovation results.

Moreover, in the health domain approaches to knowledge integration have been greatly administrated at the computer systems-level for the purposes of enhancing distributed health knowledge resources, the use of health integrated systems is pivotal to the success of knowledge integration. WHO, (2012) argues that a health integrated systems are used to perform particular tasks, such as storing, retrieving and gathering health guidelines, clinical trials and treatment protocols. Such systems assist in the integration of knowledge by enabling rapid access to search and retrieve data and support the collaboration and communication among organisational members and medical experts. The provision of an integrated health system is considered as a basis for knowledge creation and allows for more knowledge sharing between diverse domains, which in turn can lead to improvement to quality healthcare delivery. WHO (2007) posits that the goal of a health information system ultimate purpose is to produce relevant healthcare information, which the department and stakeholders can use for making transparent and evidence-based decisions for health system interventions. Health information

system provides the foundation for the generation of good-quality data, and major building block of the health system. It integrates collection, processing, reporting and use of information required for improving effectiveness and efficiency of health services through enhancement of management at all levels within the health system. A robust, integrated information system is thus the foundation for building a successful national healthcare delivery system.

5.6. Comparative analysis of similarities and differences between NDoD and NDoH

	National Department of Health	Enabling Context	National Department of Defence	Enabling context
Distinctive characteristics	Organizational mandate Evidence based discipline Knowledge based discipline Complex industry with many stakeholders Public and private healthcare		Organizational mandate Evidence based discipline Knowledge based discipline Strict hierarchical and command system	
Knowledge purpose	Knowledge exploration Knowledge exploitation		Knowledge exploration Knowledge exploitation	
Knowledge processes	Knowledge creation	Networking, Trust, Boundary objects, Shared identity, Boundary spanners, Social capital	Knowledge creation	Networking, Trust, Boundary objects, Shared identity, Social capital
	Knowledge sharing	Trust, Networking, Boundary objects, Shared perspective, Social capital	Knowledge sharing	Trust, Networking, Shared perspective, Social capital
	Knowledge codifying	Common language Tangible output	Knowledge codifying	Common language Tangible output
	Knowledge integration	Trust Networking Boundary objects	Knowledge integration	Trust Networking Boundary objects

Table 5: Summary of similarities and differences between NDoD& MV and NDoH

5.6.1. Distinctive characteristics between NDoD & MV and NDoH

Although the two departments are deemed to be similar in structure (hierarchy) and functions (service delivery), they are in fact unique and complex, with distinctive organizational characteristics. Thus, the DoD & MV comprises of a hierarchical structure with strict command system, the whole structure is characterised by command systems with many sub-directorates

whereas the NDoH in its service delivery is dependent on its many local and international stakeholders. It is the only government department which relies on distinct professional healthcare professionals with divergent rules, job representations, behaviours and value coverage engage in a collaborative process, with both explicit and tacit knowledge aspects, to deliver accessible, quality and cost effective healthcare services to the country as a whole. It relies on third parties such as private hospital and clinics, drug companies, health care insurance companies, activists' groups, academic institutions, research communities. The other differentiation factor of NDoH from NDoD & MV is that its work can at times be of an emergency or non-deferrable nature (case of life and death) and there is very little space for ambiguity or error. Whereas NDoD & MV has a hierarchical structure with strict command system and the whole structure of the organization is characterised by command systems with many sub-directorates reporting to various commanding officers.

5.6.2. Knowledge purpose

The two departments (NDoD & MV and NDoH) are knowledge intensive organizations, which according to KM literature should use structural ambidexterity thus, the balancing of knowledge exploration and knowledge exploitation in order to enjoy benefits of knowledge management such as stakeholder management of experts from various fields of their respective sectors, and ultimately draw benefits from both sides of strategic knowledge purpose thus, knowledge exploitation and exploration.

5.6.3. Knowledge processes and enabling context at NDoD & MV and NDoH

5.6.3.1. Knowledge creation and knowledge sharing

The key enabling factors for knowledge creation at the NDoH are networking, trust, boundary objects, shared identity, boundary spanners and social capital. For instance, knowledge creation at NDoH requires collaboration of different health care professionals and experts, its local and international stakeholders, from various healthcare sector organizations, since in most cases they deal with diseases, environmental and medical conditions outbreak in which the department has to work with other organizations to combat the outbreak. The NDoH knowledge creation heavily depended on inter-organizational networks, and external

healthcare organizations which are characterized by a range of external stakeholders and regulatory agencies with healthcare knowledge in the form of guidelines and performance targets. Knowledge sharing among healthcare professional is essential for ensuring best practices and continuity in healthcare delivery. Networking, boundary objects, shared perspective and social capital are key enablers of knowledge sharing at NDoH. Whereas, the Sensoy, et al. (2005) knowledge management cycle was used to analyse knowledge creation and sharing in the NDoD & MV. The cycle comprises of lessons learned, doctrines, operations and exercises, and training and education. It must be emphasized that there are many enabling factors for knowledge sharing and creation in military/defence organizations but only five were covered because they are typical distinctive to defence/military organization, thus community of practice (COP), gaming, couching and mentoring, lessons learned, professional interviews.

5.6.3.2. Knowledge integration

The NDoH is a large multidimensional, complex and dynamic organisation that works with a number of key local and international stakeholders in the health sector thus researchers, academia, research institutions (such as WHO, CSIR, NRF), regulatory agencies and many others. The department rely heavily on integrating their vast wealth of health knowledge from all these stakeholders in order to deliver quality healthcare service. Trust, networking and boundary objects are enabling factors for knowledge integration at the NDoH. While, knowledge integration at NDoD & MV depends on the involvement of different stakeholders for the integration of organizational knowledge to gain an advantage over an enemy

5.6.3.3. Knowledge codifying

NDoH use sophisticated knowledge management systems and technologies (SharePoint, intranet, subject specific databases, knowledge repositories, decision-making tools, groupware, document management systems and others) to codify knowledge from projects, routine work, and guidelines; to deliver desired results on complex projects. The key enabling factor of codifying knowledge at DoH is a common language and tangible outputs. While NDoD & MV use formulas, codes, expert systems, memos, operational reports embedded in technologies such as the intranet, expert directory, portals, collaborative systems to codify knowledge. Furthermore, a lesson learned databases were also pointed out as a technology which the

department use to easily access doctrines and connects operational directorates with subject matter specialists/experts.

Chapter 6: Analysis and discussion of findings

6.1. Introduction

The overall purpose of this chapter is to deliver acceptable answers to the questions of the study which are highlighted in chapter one, through analysing and discussing findings emanating from the method of research as proposed in the research methodology chapter. The first question - although it might appear from some perspectives, to prime facie (on the face of it) be unrelated or be faintly related to public sector knowledge management and alignment of knowledge management framework to knowledge purpose, knowledge processes, and enabling context, which leads to high failure of knowledge management initiatives; a closer investigation of the nature and extent of the identified root causes of high failure of knowledge management initiatives in the public sector ultimately points to a need for a more focused analysis of the relationship between knowledge purpose, knowledge processes and enabling context when selecting/drafting a knowledge management framework for public sector organizations.

The first question under consideration is the alignment of knowledge management framework to knowledge processes and enabling context. Newell's theoretical framework has been outlined and analysed in chapter three, with the sole purpose of demonstrating that the selection of KM frameworks in the public sector should be aligned to the three dimensions of knowledge work thus knowledge purpose, processes and context. The second question is whether public sector organizations should use contingency/conditional approach and theory when selecting/drafting knowledge management framework depending on the organization's unique and distinctive characteristics, knowledge management needs, organizational culture, and operational and legislative mandate. In answering these questions this study laid a foundation by outlining the theoretical framework which began with exploring the concept of knowledge and knowledge management from an epistemology of possession and practice. This study used the epistemology of practice, because it associated itself with Boland and Tenkasi, (1995) as cited by Newell, et al. (2009, p.15) argument, which stipulates that "managing knowledge work is less about converting capturing and transferring different forms of knowledge and more about building an enabling context that connects different social groups and interests, identifies and perspectives to accomplish specific tasks or purposes". And more about the building

communities of practice and networks which will enable knowledge creation and sharing. The second part of the theoretical framework outlined on the alignment of knowledge management framework with an organization's knowledge purpose, processes and context. The study used Newell, et al. (2009) theoretical framework to demonstrates that when adopting and implementing knowledge management in an organization; knowledge management framework should be aligned with the three dimensions of knowledge work thus knowledge purpose/content, knowledge processes and enabling context. The last part of the theoretical framework used Cruywagen, et al. (2008a, 2010b) to challenge the pursuit of universal KM framework (commonly aligned with best practice and one size fits all phenomenon), which is a common feature in KM literature and recommended the use of contingent/conditional approach and theory.

The study used Draft DPSA KM strategy framework (2016) to prove that the DPSA (in general South African government) advocates/subscribe to universal knowledge management framework. On the contrary the study used three international KM frameworks (Inukshuk KM model, Department of Navy KM model, and Health Canada) to demonstrate that in countries (like Australia, Canada, United States of America (USA), United Kingdom (UK) etc.) government departments draft their own KM model in line their organization's unique and distinctive characteristics, knowledge management needs, organizational culture, and operational and legislative mandate.

6.2. Alignment of knowledge purpose, processes and context

This study used Newell, et al. (2009) theoretical framework which shows that the selection of knowledge management framework should be aligned to the three dimensions of knowledge work thus, strategic knowledge purpose (organization's strategic knowledge management goals/needs), knowledge processes (knowledge creation, knowledge sharing, knowledge codifying, and knowledge integration), and enabling context (creating a conducive environment for knowledge processes). This forewarns knowledge management practitioners to the notion that knowledge management initiatives in any organization must take into consideration organization's unique, complex and distinctive characteristics, when selecting/choosing knowledge management framework.

6.2.1. Knowledge purpose: knowledge exploitation and knowledge exploration

In its basic form strategic knowledge purpose is the organization's strategic plan for adopting knowledge management initiative in an organization. Newell, et al. (2009) demonstrate that organizations adopt knowledge management either for knowledge exploration or knowledge exploitation or a combination of both (but typically with more emphasis on one than the other) while other knowledge management scholars and practitioners advocates for either or. Gupta (2006) advocated for structural ambidexterity thus, the balancing of knowledge exploration and knowledge exploitation. As Levinthal (1993, p.105) stated "an organization that engages exclusively in exploration will ordinarily suffer from the fact that it never gains the returns of knowledge" while "an organization which engages exclusively in exploitation will ordinarily suffer from obsolescence". This study is of the view that knowledge intensive organizations like South African government department (NDoH and NDoD & MV) should apply a certain amount of ambidexterity, by which they will enjoy the benefits of knowledge management such as constant and tempestuous dynamics of stakeholder management of experts from various fields of healthcare and military/defence sector, enjoy the benefits from both sides of strategic knowledge purpose thus, knowledge exploitation and exploration, avoid innovation challenges and learn from previous errors, and maintain healthcare sector distinctiveness and avoid changing their identity.

6.2.2. Knowledge processes and enabling context

This part tackled appropriate aspects of the four knowledge processes from the epistemology of practice perspective of managing knowledge work, which emphasized the significance of intra- and inter-organizational context which acts to either which acts to either support knowledge work or disrupt knowledge work processes. Newell, et al. (2009, p. 233 – 244) precisely underlined social capital, community of practice (COPs), trust, a common language, organizational culture, shared identity, time, diversity, shared identity, boundary spanning, boundary objects, social capital, a common language, tangible output etc. as the ultimate and suitable enabling contexts which support knowledge work in an organization; however, chapter 3 of this study demonstrated that in epistemology of practice perspective different aspects of enabling context play a greater or lesser role in facilitating particular knowledge processes depending on the strategic approach of adopting knowledge management.

6.2.2.1. Knowledge creation

There's no shortage of literature on knowledge creation from both epistemology (possession and practice) which dates back to Nonaka (1994) SECI model to knowledge work which recognise the importance of social interaction and address process, context and purpose. Furthermore, he adds that knowledge creation requires the application of both tacit and explicit knowledge over experimentation, discussion, workshops, seminars etc. in projects and teams in order to generate new knowledge. Professionals such as lawyers, engineers, scientists who dominate the public sector particularly healthcare and defence industry rely on tacit and explicit knowledge to varying degrees in their work, simply put they rely more on codified knowledge and codification during knowledge creation processes. Regardless of the emphasis on codified knowledge, knowledge creation in any organization (private or public sector) rely on the application of expertise, skills, intellectual skills and expertise, in a team or individually.

Facilitating knowledge creation in a complex knowledge intensive organization requires significant managerial effort to be placed on enabling context, this study highlighted trust, time, social capital, boundary spanners, boundary objects, rewards, and social capital as key enablers of knowledge creation. This study stressed the importance of developing an enabling context and promotion of a significant degree of autonomy (employee discretion) and the importance of a culture that promotes a shared sense of identity, which combined with cultural conditions which recognise diversity of views in an organization. in demonstrating the importance of a shared perspective and time by stating Newell, et al. (2009) that employees should be given time and ICT tools to codify experiences to share ideas, expertise and skills with one another. This may be in a form of giving them time as well as tools to engage in debates and dialogue in order to further their understandings. These kinds of engagements are vital in order for a shared identity, shared perspective and trust to develop which in not so distant future will promote effective creation of knowledge.

6.2.2.2. Knowledge sharing

This study concurs with Newell, et al. (2009) assertion that there are mixed empirical findings about success/failure of knowledge sharing in KM literature. In this regard several studies such as Huang, et al. (2010), Esperanza, et al. (2012) which focused on the complexities of knowledge sharing in knowledge intensive organization were noted. These empirical studies

had one thing in common thus citing organizational culture as one of the greatest obstacles of effective knowledge sharing. Esperanza, et al. (2012) study investigated how national culture impacts knowledge sharing and found that employees individualistic culture like UK and USA are open to sharing successes than failures, on the contrary the findings of the study stated that employees from a collectivist culture like China and Mexico, employees are more likely failures than success. Whereas Huang, et al. (2010) conducted a study of collective culture of China to test whether Chinese employees engage in sharing knowledge when knowledge sharing was perceived threatening to loss of status/authority in an organization, the study found that employees are less likely to share. These empirical studies demonstrated the complexities and importance of national and organizational cultural differences in explaining the effectiveness of knowledge sharing.

This study highlighted trust, community of practice, and networks and networking, as key enablers of knowledge sharing and underlined the knowledge is power notion, and incentivizing system as possible knowledge sharing hindrance factors of knowledge work in a knowledge intensive organization. Trust has been widely cited in KM literature as one of the most effective way which positively contributes to knowledge sharing in the healthcare sector, when there is trust among medical experts and professional in a healthcare organisation, there is an inclination of constant collaboration and group work. Establishment and gaining of trust between health professional usually takes a long time of experience and expertise, however, trust in healthcare projects often makes or breaks collaboration. Furthermore, trust was highlighted as one of the most important aspect of enabling knowledge sharing, even though companion trust may have an effect on effective knowledge sharing. Trust takes different forms (companion, competence, and commitment) and has strengths and weaknesses as highlighted in chapter 3.

Community of practice, networks and networking works in a similar way, they provide an opportunity for employees to network, learn, and interact with other employees working in similar fields. And enable experts from different fields/disciplines to collaborate in sharing experiences, practices, and tools that are relevant to a specific topic.

6.2.2.3. Knowledge codifying

Knowledge codification is aligned to an epistemology of possession view of knowledge management; hence KM literature highlighted obstacles related to codifying knowledge, however there are organizational contexts in which codification can be valuable, effective and efficient way to exploit individual and organizational knowledge. Many large organizations such as public sector organizations have successfully developed knowledge management systems and document management systems in which codified knowledge from projects, routine work, and guidelines on how to deliver desired results on complex projects are stored codified in computer programs such as SharePoint, intranet, subject specific databases, knowledge repositories, decision-making tools, groupware, document management systems and others. Although, they do not solely rely on codified knowledge, it is strategically important project knowledge is codified but the challenge for many organizations is keeping knowledge up to date. Newell, et al. (2009) highlights that different group of professional/knowledge workers rely heavily on codified knowledge in their work, and specifically highlight the legal profession as one of the professions which rely almost entirely on codified knowledge. The legal profession generates vast quantities of codified knowledge that take the form of legislations, court judgements, court proceedings, case laws which are subsequently applied in future court proceedings and some are revised overtime.

One of the key enablers of codifying knowledge process is the development of a system which is used for the interpretation language which they use to store information in knowledge codification tools. Newell, et al. (2009) stresses that one of the factors which very often hinder knowledge codification in healthcare sector is time, healthcare sector professionals are at times very busy which results in them not having enough time to codify knowledge. It is indeed time consuming to implement standards of reference (symbolic, medical languages, numerical, and taxonomies etc.), performance standards, and vocabulary of commonly used terms.

This study demonstrated that knowledge is a product of input and output of knowledge codification process, with specific reference to the healthcare sector, a healthcare professional need knowledge and expertise to codify tacit knowledge, furthermore the end user of codified knowledge require codified knowledge require a specific set of skills, expertise and experience to use codified knowledge. Therefore, these dynamics of knowledge (and knowledge codification processes) has two implications, thus, knowledge cannot be taken as a possession

of the beholder, or stock gained through information and it cannot be considered distinctly from its beholder or from its location. This stress the importance of collaboration and individual intellectual processes through knowledge is codified, converted, stored and retrieved for future references.

6.2.2.4. Knowledge integration

The importance of networks and networking, shared perspectives, social capital and trust by members of team in the wider context and role of social networking in promoting knowledge integration were highlighted. Epistemology of practice viewpoint of knowledge management advocates that each employee/team member of an organization has a network of interpersonal relationship both internally and externally which from time to time they can choose to draw upon in their work or so some degree they know an expert in a particular subject matter whom they can contact if need be.

Newell, et al. (2009) stressed that there are challenges which are associated with knowledge integration/team work which at times may lead to poor outcomes such as conformity, groupthink, group polarisation, diffusion of responsibility rather than taking responsibility, sound decision making, peer-to-peer supervision, which can hinder the processes of knowledge integration. Furthermore, they emphasized that management have to take into serious consideration of these challenges when supervising teams for the reason that some of the most successful teams in the past may not necessarily to be so in the future, if any of these group dynamics emerge. Consistent performance appraisals and evaluations of the team as a whole (not only engaging with the group leader) can lead to early detection and identification and quick solutions of the problems which may hinder knowledge integration.

6.3. Contingency and universalistic approach to knowledge management framework

This study has recognised and confirmed that the value of knowledge depends on the context of its application, which leads to a much more nuanced approach to managing knowledge work. In particular, the study challenged the notion of a universalistic approach to knowledge management frameworks and stressed that what may be identified in one organization or one

part/department of an organization, as best practice may be highly problematic to use across other parts of the organization or other organizations. There's no denying that best practice is highly recommended particularly by HRM literature mainly because it avoids reinventing a wheel but this study demonstrated that what may seem to work or applicable in one organization/s may not necessarily yield the same results in another organization, not only due to organizational contextual differences but also because there various knowledge processes which hinder or support KM depending on the distinctive characteristics of the organization.

This study relied on strategic management, organization and KM literature notably Cruywagen, et al. (2008a, 2010b), Miles, et al. (1978) and Franken and Braganza (2006) to explore the notion of contingency theory and universalistic approach (also known as one size fits all) to knowledge management frameworks. Most knowledge management frameworks literature advocates for the pursuit of knowledge management best practices while failing to acknowledge and address contextual differences between organisations. Furthermore, Franken and Braganza, (2006, p.5) acknowledged that KM literature typically described knowledge management frameworks as "all very similar in nature, creating the perception that a standardised knowledge management approach with universal applicability exists". The implication for this approach is that knowledge management initiatives in public sector organizations very often fail to yield desired results, which gives ammunition to anti knowledge management scholars who have already labelled it as just another management fad, which going to die a natural death. To cater and acknowledge for the contextual differences and distinctive characteristics between organisations, knowledge management frameworks should avoid using the universalistic approach and opt for a contingency approach. Public sector organizations should use Newell, et al. (2009) theoretical framework on knowledge purpose, processes and context or like-minded theoretical frameworks which will provide a mechanism to investigate and understand unique and distinctive characteristics of the organization, knowledge management purpose, knowledge processes and enabling context, and based on this theoretical framework, and serve as a point of reference on what should be avoided in the adoption, implementation, and practice of knowledge management in the public sector, which in turn will ultimately reduce the high failure rate of knowledge management.

6.4. Knowledge management frameworks

This study used the Draft DPSA KM strategy framework (2016) to demonstrate that the DPSA advocates to a universalistic approach to knowledge management; and used three international knowledge management models (Inukshuk: A Canadian knowledge management model, DON Navy KM model and Health Canada) to demonstrate that countries like United Sates of America (USA), Canada, United Kingdom (UK), Australia, etc.; government departments draft their own KM frameworks when adopting and implementing KM programs in line with distinctive, unique and complex characteristics of the organization. They demonstrated that KM framework in public sector organizations should be aligned to knowledge purpose, processes and enabling context. In the same vein, it acknowledged that one of the greatest challenges KM literatures provides very little empirical studies on public sector knowledge management knowledge management framework and the available literature provides very little guidance on the implementation and how knowledge management should be maintained and sustained. And many of them are built upon or incorporated on Nonaka Takeuchi's SECI knowledge spiral and Ackoff's pyramid to wisdom.

6.4.1. The Draft DPSA Knowledge Management Strategy framework

This study posits that the Draft DPSA KM strategy framework (2016) advocates for universal KM framework thus, it stipulates that their framework is intended to be used by all South African government institutions (national, local, and provincial government institutions) to inform, develop, and form the base of their individual KM strategies. Furthermore, (p.14) this framework states that "the purpose of the National KMF is to provide conceptual clarity and leadership that allows public service institutions to implement KM successfully. It aims to provide and define a standardized way for government across the three spheres to identify, source, store access and manage knowledge. Therefore, it provides the reference on how KM shall be implemented uniformly within the public service of SA". The DPSA: Draft generic model (2016) provides the rationale for advocating for a universalistic approach, thus to provide a framework/blueprint and ensure consistency and have documented guidelines. And to provide a common understanding and do away with duplications and overlaps which create confusion and efficiencies within the whole organization. Furthermore, the draft generic model states that the adoption on a universalistic approach emanates from the assumption that public

services are similar and requires similar processes, technology and resources; therefore, the assumption is that the organisational structures should have generic characteristics. The development of generic structures considers the fact that "no one-size fits all" to provide for provincial context i.e. provincial dynamics and other factors that may impact on the organisational design issues.

The Draft DPSA KM strategy framework (2016) contradicts the assertion that the purpose of the framework is to serve as a guideline/reference point, "framework recognises that Institutions are not homogenous hence it is not possible to produce a blueprint that can be generically replicated across all Institutions. The Framework is thus "principles" rather than "prescriptive" based and adopts the approach of elucidating the principles, standards, models and practices proven to support and sustain effective Knowledge Management. "Institutions are expected to develop their systems of Knowledge Management by adopting the said principles and standards, and adapting the models and operational practices to match their specific Institutional requirements" (p.14). This extract from NKMSF, (2016) suggest that South African public sector organizations should use this document as a guideline which to a greater extent is what thus study is recommending; except that it is visible clear that this framework is intended to serve as a national knowledge management framework for all public sector organizations. This study has demonstrated that the public sector organizations cannot be treated as an undifferentiated whole, therefore developing KM framework like the Draft DPSA KM strategy framework will lead to high failure or limit the effectiveness of KM initiatives in the South African public sector. Instead of drafting the national KM framework, the DPSA should rather draft KM guidelines which will serve as the guide for the development of KM strategy framework, wherein all the South African public sector organization will draft its own knowledge management framework in line with its unique and distinctive characteristics.

It is important to note that from 2001 to 2002 financial year to date, the DPSA has had three draft KM frameworks thus, draft learning and knowledge management framework, (2003); towards a learning and knowledge management framework for the public service, (2011); and draft DPSA KM strategy framework, (2016); which very interestingly were not approved to become an official document/transcript. It can only be speculated (although not part of the scope of the study to virtue into politics) that the non-approval of the DPSA KM framework into an official

document or official transcript could be attributed to constant changing of executive management (particularly the Minister and Deputy Minister) at DPSA, in the past 5 – 10 financial years the department has had 5 Ministers and Deputy Ministers, many of whom never finished their terms of office. Even the Draft DPSA KM strategy framework (2016, p.12) states that "the implementation of KM in the Public Service has progressed without an agreement on a framework of standards, systems and commonly accepted definitions and terms". This has contributed to challenges on clarity of the KM concept and this affects among others modalities of implementation in the public service". Furthermore, (p.13) acknowledges that "KM implementation in the public service has grown in an ad hoc fashion and has resulted in multiple approaches leading to weak integration of KM in the main-stream institutional functioning processes". This concession implies that it is free for all at South African public sector organizations, wherein a government institution does not have guidelines for the implementation and institutionalisation of knowledge management.

This study concurs with the DPSA KM strategy framework (2016) with respect to the creation of positions for KM professionals (such CKO, KM champions, KM managers etc.) and departmental KM committee in South African public sector organizations. It is accepted as a fact that the establishment of departmental KM committee will ensure that knowledge management framework is aligned to knowledge purpose, processes, and context, draft KM framework and implementation plan within the department, capacitate the KM unit to ensure that skilled staff and appropriate resources are allowed to implement and maintain KM in the department. Furthermore, the creation of KM posts/positions (if they don't already exist) in the public sector organizations such as CKO, KM champions and KM managers will ensure that knowledge management is institutionalized in the public sector.

6.4.2. The Inukshuk Knowledge Management model

The Inukshuk KM model grew out of KM initiatives in Canadian public sector and it is founded/grounded on Nonaka and Takeuchi, (1995) SECI model of socialisation, externalisation, internalisation and combination and Stankosky's four pillars of KM. This KM model was drafted by employees of the Canadian Department of National Defence and was widely accepted as the department's strategic plan for the adoption and implementation of knowledge management. The model was developed as a consequence of the findings Prof Girard research on torii and it was based on an Inuit structure known as Inukshuk. According

to Girrard, 2010 p. 72) cited Virtual Museum of Canada which described Inukshuk as "like a person, an arrangement of stones, often resembling the shape of a human and it is used as a navigational aid, as a marker for hunting grounds and caches of food or supplies, in hinting to lure geese and corral caribou and as a way to mark sacred ground".

The Inukshuk is one of the well-known symbols which is associated with the history and tradition of the people of Canada. According to Girard, (2010, p.72) Inukshuk "is like a person the arrangement of stones resembles the shape of humans". This assertion demonstrates that this model demonstrate that people play the most significant part in KM. The Inukshuk model is grounded on five elements thus, technology, measurement, leadership and culture. Girard, (2010) further associated the model with Inukshuk, and argued that just the model needs suitable balance of key elements of KM or the implementation of KM will eventually collapse. For KM implementation to succeed in any organisation, it requires strong leadership, advanced technology and most importantly culture of knowledge creation and sharing, and the highest part of the model, thus measurement.

The five components of KM according to this model were integrated and initially represented using the Japanese torii structure, used to symbolise a portal affording entry into a sanctuary. However, these symbols were not well understood by the end users. As a result, the five components were repackaged using the symbol of Inukshuk stone model created by original Canadian people who work their passages on a journey. The Inukshuk KM model was widely accepted as a useful guideline for the implementation of KM.

The Inukshuk has been widely cited as one of the best public sector KM models to date, for a number of reasons. Thus, it's been built on a well-known symbol which the people of Canada associate with, which symbolizes their strong spiritual and ancestral believes. Inukshuk resemble people, because people play the most important role in the adoption and implementation of knowledge management. Although Inukshuk look similar (just like the South African government departments) but they are nevertheless different from one another, as such each government department is unique. The level of acceptance and association with the Inukshuk has been unprecedented. According to Girard, (2005) stated that most managers at the Canada department of Defence approve of the use of Inukshuk symbol to guide the

institutionalisation of knowledge management practice, which has arguably been one of the most successful.

6.4.3. The Department of Navy knowledge management model

According to DoN KM model, (2001) the department is a unique, complex, and distinct global organization which consists of various sub-directorates. It is a well documented fact that DON KM model has been widely cited in public sector knowledge management literature as a leader, a point of reference in the implementation of KM. Similar to other KM frameworks such as Inukshuk KM model, (2006), NKMSF, (2016), and Health Canada, (1998) has five key pillars thus, culture, learning, processes, content, and technology. The department of Navy was one of the first branches of military organizations to successfully adopt and implement knowledge management and it was military experienced based model than academic research/theory. Most importantly according to DoN KM model, the Chief Information Officer played a key role in the development of DON KM framework, to this end the CIO authored the metrics to KM initiatives and facilitated KM implementation at the Department of Navy. Similar to what this study is recommending, DON KM model recommended the establishment of KM champions within the department.

6.4.4. Health Canada

According to Health Canada KM framework (1998) started by recognising the strategic approach to knowledge creation and sharing, and identified gaps between the supply-demand for information in the healthcare sector. Health Canada is one part of the integrated Canadian health system, which to a greater extent is part of international health system. Health Canada KM framework was drawn by the department in collaboration with its healthcare stakeholders, with the sole purpose of managing knowledge and make sure that healthcare organizations, stakeholders, and the department itself contribute to improve the quality of healthcare for the people of Canada.

Health Canada recognizes the fundamental role which knowledge management play in improving the quality of health system and drafted knowledge management model for the department. According to Health Canada KM model (1998, p.7) the “central goal for

implementing KM in Health Canada was to use the knowledge that resides in the department - in the heads of our staff, in the relationship they had with other organizations and in their repositories of information – to fulfil the department's mission of helping people of Canada to maintain and improve their health". Furthermore, this framework highlights that the adoption of KM will ensure that health knowledge is created, shared and efficiently and effectively managed, which will ultimately lead to better health decision making. The adoption of KM will in turn, assist the people of Canada, to demand and hold the department to account and deliver the required quality healthcare services. Strategic investments in knowledge and commitment to knowledge culture, then, are instrumental in maintaining and improving the health of Canadians.

Just like, NKMSF, (2016), DON KM model (2005) and Inukshuk; Health Canada KM model as well recommends several strategic initiatives were recommended to support the department in the implementation of KM, thus institutionalise the culture of knowledge sharing, the creation of Chief Knowledge officer (CKO) position if it is not already in existence. The rationale for the establishment of such a position is to improve the department capacity to institutionalize the practice of KM. it also recommends the creation of business specialist, which will assist the department to create and share knowledge.

6.5. South African public sector and selected government departments

It was emphasized in chapter five (5) that it is widely accepted that KM first started by the private sector in countries such as United States of America, Canada, and Australia, the public sector followed afterwards. There is also a school of thought which argues that KM started at both private and public sector at the same time (Mphahlele, 2010) but this study subscribes to the understanding that KM first introduced in the private sector which is arguably one of the reasons that the public sector is not in the same level to its counterpart the private sector with regard to the adoption and implementation of KM. The rationale for using NDoD & MV and NDoH for the purposes of this study is primarily because they are amongst the biggest departments, unique, complex and diversified national government departments.

According to the public service act, (1994) and public administration management act (2014), the DPSA is responsible for the development of norms and standards which support an

improved efficiency and effective public service delivery. To this affect Munzhelele, (2012) argued that the DPSA is at the forefront of the implementation of KM in the South African public sector, it supports government institutions at large in developing a platform for KM implementation. The DPSA introduced and coordinated the implementation of KM since 2001, up to this far the DPSA has drafted three drafts of KM frameworks unfortunately none of the KM drafts were adopted an official KM framework or KM policy for South African government departments. At this present moment the only visible action taken by the DPSA with regard to the implementation of KM is the drafting of SMS handbook which made KM a mandatory competency for all senior managers in South African public sector. The DPSA further mandated all public sector organizations to institutionalize KM in the organizations.

6.5.1. Department of Defence and Military Veterans

The NDoD& MV is a large, unique, and complex organization and it is different from other government departments (this is not to claim that all government departments or South African public sector organizations are alike) in terms of structure, leadership, inter organizational cooperation, and a host of other topics. Not all of these features are unique to the military, nor are all of them stark in contrast to public sector organization features. The NDoD & MV has a hierarchical structure with a strict command system (the president of the republic is a designated commander-in-chief by the constitution). The whole structure of the organization is characterised by command systems with many sub-directorates reporting to various commanding officers. The distinctive and unique organizational characteristics of NDoD & MV are that unlike the other national departments of the South African public sector, the department provide does not provide a direct service to the citizens of South Africa, but does so through the state departments that it supports when so tasked. Its most visible operations are the operations which are executed by the National Defence Force in the form of peace support operations and disaster relief in neighbouring countries and assistance provided to the South African Police Service (SAPS) in emergency situations.

According to military literature what isolates military organizations to be specific the NDoD & MV from their counter parts thus other government departments is the strict culture, military values, uniformity, discipline, and obedience.

6.5.1.1. Knowledge purpose, knowledge process and enabling context

6.5.1.1.1. Strategic knowledge purpose at NDoD & MV

The complexity of the department dictates for the use of ambidexterity, thus the balance between knowledge exploitation and knowledge exploration. The study demonstrated that when defence/military organizations get in trouble when they excessively invest in knowledge exploitation than in knowledge exploration. The USA Defence example demonstrated that the balance between knowledge exploration and knowledge exploitation is highly required and applicable in the military/defence organizations. March (1991) cautions against the danger of focusing exclusively on either exploration or exploitation and suggests that a balance between the two modes of knowledge creation may be more appropriate. Simply put, too much knowledge exploitation binds the organization to impending frame breaking changes in its environment and cripples it when the changes do occur. Whereas too much knowledge exploration won't pay the bills fast enough because almost by definition a lot of effort will be wasted before effective answers or operational formula can be found.

6.5.1.2. Knowledge processes and enabling context

6.5.1.2.1. Knowledge creation and knowledge sharing

The NDoD & MV has a distinctive culture, strict hierarchical structure with a strict command system which makes in different from other government departments, its knowledge creation and sharing is no exception, and it is completely different from other organizations. Military knowledge management cycle by Sensoy, et al. (2005) was used to highlight and demonstrate how military organization create and share knowledge. The cycle comprises lessons learned, doctrines, operations and exercises, and training and education. It must be emphasized that there are many enabling factors for knowledge sharing and creation in military/defence organizations but only five were covered because they are typical distinctive to defence/military organization, thus community of practice (COP), gaming, coaching and mentoring, lessons learned, professional interviews.

6.5.1.2.2. Knowledge integration

Knowledge integration at NDoD & MV stressed the involvement of different groups (army, navy, air force, and maritime), support staff (HR, finance), and stakeholders in the integration of organizational knowledge to gain an advantage over an enemy and create concussive environment in which best practices, integrated processes, and operations designed and structured to enhance and institutionalise collaborative and innovation enabling capabilities for the department, which in turn will accelerate decision-making capabilities and enable a superior battle space awareness through boundary less sharing of intellectual capital.

6.5.1.2.3. Knowledge codifying

Highlighted that there are various ways in which the NDoD & MV use for encoding organizational knowledge (thus knowledge codifying) such as formulas, codes, expert systems, memos, operational reports embedded in technologies such as the intranet, expert directory, portals, collaborative systems and others. Furthermore, lessons learned databases were also pointed out as a technology which the department use to easily access doctrines and connect operational directorates with subject matter specialists/experts.

6.5.2. Department of Health

The NDoH is a dynamic, complex and highly regulated organization; the complexity of the department arises from the fact that healthcare sector has several local and international stakeholders who participate in the delivery of improved and quality healthcare service. The continuous discovery of new illnesses/diseases that could be encountered without adequate existing knowledge for proper diagnosis or treatment; and the uniqueness of each patient's case and special needs. The delivery healthcare service is unique in reference to others services, the primary loyalty of health professionals are with their profession other than the organizations they work for. The department comprises distinct organizational characteristics, knowledge needs, knowledge processes and enabling context.

6.5.2.1. Knowledge purpose, knowledge processes and enabling context

6.5.2.1.1. Organization's strategic knowledge purpose

Organizational ambidexterity was deemed relevant and applicable to the NDoH, it permits the department to concurrently use and cultivate existing knowledge to refine internal operations (knowledge exploitation) and generate new knowledge through search and experimentation to advance existing frontiers of best practice. The NDoH is required to at all times deliver quality healthcare, in order to accomplish this; they have to draw upon best practices evidence, latest scientific advances, national statistics, clinical trials which stimulate knowledge exploration and innovation. And they have to exploit the tacit knowledge embedded in frontline practice and high levels of basic care must be standardised, refined and developed (knowledge exploitation).

6.5.2.2. Knowledge processes and enabling context

6.5.2.2.1. Knowledge creation and knowledge sharing

Knowledge creation at NDoH depends heavily on collaboration of different healthcare professionals and industry experts (inter-organizational networks, local and international stakeholders, various healthcare sector organizations, research institutions, academic institutions, regulatory agencies etc.), since in most cases they deal with diseases, environmental and medical conditions outbreak in which the department has to work with its stakeholders to combat the outbreak.

As healthcare delivery is a collaborative effort, professionals working in healthcare facilities must share their experience, ideas and expertise to ensure quality healthcare delivery. Knowledge sharing among healthcare professional is essential for ensuring best practices and continuity in healthcare delivery. KM literature on public health stipulates that communities of practice and networks provide a new pathway for health professionals to share evidence and new knowledge between the various different specialized healthcare professionals (physicians, nurses, technicians, etc.) that are members. CoPs and networks thus provide a mechanism for the different professional groups that exist within a healthcare organization, to leverage on their

tacit knowledge base. They are a great platform in which knowledge is shared, used and valued in decision making and action planning between agencies, professional groups.

This study highlighted that community of practice, and networks and networking are key enablers of knowledge creation and sharing at NDoH. Healthcare delivery is a collaborative effort in which medical professionals working in various parts of health industry share skills, expertise and experience to ensure that they deliver a high standard and quality healthcare. Several researchers have noted that the transfer of knowledge among healthcare practitioners (physicians, nurses, technicians) is dependent on professional networks and communities of practice.

6.5.2.2.2. Knowledge codifying

The delivery of quality of healthcare service is important to the development of any nation in the world, mainly because it contributes significantly to the productivity of a nation and the life span of its citizens. Therefore, the NDoH has been given a very difficult task of managing a complex, multifunctional and knowledge intensive sector, which works with local and international stakeholders, who produces volumes of operational data which requires seamless knowledge codifying systems that will enable efficient and effective decision making to deliver quality healthcare services. As such the department use technologies such as collaborative and communication technologies, health portals, artificial intelligence, groupware, advanced computer storage techniques; sophisticated retrieval techniques such as query languages, multimedia databases and database management systems, intelligent tools and technologies such as artificial intelligence, expert systems, neural networks, fuzzy logic, genetic algorithms, case-based reasoning, agents and knowledge discovery databases, which they use to capture and codify the knowledge of the healthcare experts/community.

Provisioning of healthcare services is generally collaborative work involving many local and international stakeholders from complex and distinctive organizations. Healthcare is one of the professional disciplines which rely on the combination of both tacit and codified knowledge. Codified knowledge used by health care providers includes scientific research outputs, clinical guidelines and operating manuals; electronic libraries, data mining tools, and service-related audit data.

The key elements of achieving quality healthcare service delivery is sound knowledge codification mechanisms and organising healthcare services in accordance with people's needs and expectations (service delivery). This also involves the codification of knowledge from diverse healthcare professionals/experts across the healthcare sector and facilitates collaborative work and increase stakeholder participation.

6.5.2.2.3. Knowledge integration

The NDoH is a multidimensional organization that works with several key healthcare sector stakeholders (research institutions, regulatory bodies, academic institutions) and private sector. The department relies on incorporating and integrating healthcare knowledge from these stakeholders in order to deliver its constitutional and obligatory mandate, thus healthcare. To support knowledge integration, the department have health integrated systems in place which are used to exchange and sharing of knowledge, these systems are used to store, retrieve, and gather health guidelines, clinical trials, treatment protocols and procedures. These systems are used to explore a huge amount of data in order to routinely provide expert knowledge to medical professionals. WHO, (2008) stated that the ultimate goal of health integrated information system is to produce relevant information which, the department should use to make transparent and evidence based healthcare decisions. The healthcare sector relies on integrated health systems for knowledge creation and sharing which boost the provisioning of quality healthcare delivery.

The key in relation to knowledge integration in healthcare sector is that different groups (medical experts) from the healthcare sector integrate knowledge. In addition to enhancing quality healthcare services, effective knowledge integration enables coordination and synthesis of cross-functional expertise and activities, which, in turn, serves as a mechanism to refine and create knowledge

Chapter 7: Findings and Recommendations

7.1. Introduction

This closing chapter begins with a brief summary of the findings of the research study as extracted from the analyses and the discussions in chapter six. The conclusions of the study of necessity stems from the findings, and this research study cherishes the hope that the conclusions provide plausible answers to the questions of the research - and thus, also to the thesis of the study. Recommendations for adoption and institutionalisation of knowledge management are instantaneously presented alongside the conclusions since this method is considered suitable for the illustration of the possibilities for application of same. A summary of contributions to knowledge and wrap up the report with few potential opportunities for further research are suggested for knowledge management researchers.

7.2. Summary of findings

The study relied on Newell, et al. (2009) to demonstrate that when public sector organizations (with specific reference to South African government departments) select/design knowledge management framework; they have to pay more attention to the three dimensions of knowledge work, thus knowledge purpose, processes and context, in line with its unique, complex and distinctive characteristics for each government department. Newell, et al.'s (2009) theoretical framework was outlined in chapter three, while in chapter five, two government departments (NDoD & MV and NDoH) were selected to demonstrate how Newell, et al.'s (2009) framework could be applied to the different departments (public sector organizations at large) as well as to outline the department's unique, complex and distinctive characteristics.

It is clear from evidence collected and the analysis of the draft framework, that the DPSA subscribe to a universalistic approach to knowledge management adoption and institutionalisation. Strategic management, organization science and KM literature was used to argue for a contingency approach by noting that although knowledge management frameworks are similar in nature and a universalistic approach to knowledge management frameworks is dominant in HRM and KM literature, a contingency approach is highly recommended. Universalistic approaches fail to acknowledge the complex, diverse, unique and distinctive characteristics of organizations.

The study used two national South African government departments (NDoD & MV and NDoH) to demonstrate that although the two departments are similar in structure (bureaucracy) and functions (service delivery) but they are in fact distinct in terms of organizational mandate, command and hierarchy, knowledge intensive, evidence based, stakeholder dependent, etc. Furthermore, the study used the three international KM frameworks (Inukshuk KM model, DON KM model, and Health Canada) to demonstrate that in other countries (such as Canada, United States of America, and Australia.) government department use contingency theory when selecting or drafting knowledge management frameworks in line with the distinctive characteristics of the organization.

It is the conclusion of this research study that the DPSA (responsible for formation of uniform norms and standards in the public sector) subscribes to a universalistic approach to adoption and institutionalisation of knowledge management in South African public sector institutions. However, this research study has argued on the basis of Newell that the universalistic (one size fits all) approach doesn't work in knowledge intensive organizations like modern public sector organizations. National government departments will have more relevant knowledge management frameworks that will result in better knowledge management implementations when a contingency approach is followed that takes the knowledge purpose of the particular department and its particular context into account. Thus, the South African government departments should pay close attention to the distinctive and diverse characteristics of their organization, strategic knowledge management purpose, knowledge processes, and enabling context when embarking upon knowledge management implementations.

It is the contention of this study that all the three national drafts (2003, 2011, and 2016) are not clear on their purpose and objectives, particularly NKMSF, (2016). From the onset the title of NKMSF, (2016) is problematic and creates confusion, it clearly stipulates it is a strategy/framework when inside the documents there are paragraphs which suggest that it is a guide rather than a blueprint. NKMSF, (2016, p. 14) states that "the purpose of the National KMF is to provide conceptual clarity and leadership that allows public service institutions to implement KM successfully. It aims to provide and define a standardized way for government across the three spheres to identify, source, store access and manage knowledge. Therefore, it provides the reference on how KM shall be implemented uniformly within the public service of SA". In the same page (p.14) it states that institutions are expected to develop their systems

of Knowledge Management by adopting the said principles and standards and adapting the models and operational practices to match their specific Institutional requirements". It is the conclusions of this study that while there are elements of the framework which this study concurs with, the title and the body of the framework fails to demonstrate what its purpose and objectives are. Instead of drafting KM framework, the DPSA should rather draft an official document/transcript which will serve as a guideline for all public sector organizations when they draft their own knowledge management framework which will be aligned to their organization's strategic purpose, processes and context.

7.3. Further research

Qualitative research in particular documentary research method was used for this study, specifically relying on publicly available documents, online databases and articles, it remains to be seen what kind of results could be produced when using other research methods such as comparative, surveys, interviews or participatory research method on the practice of KM in the South African public sector. With specific reference to questions such as why there is no official directive/prescripts on the institutionalizing of KM. And why there is high unsuccessful rate of knowledge management initiatives in the South African public sector organizations; and why the DPSA (the department which is mandated to develop norms and standards which support an improved efficiency and effective public service delivery) has for over a decade failed to approve even one of the drafted national knowledge management frameworks which they already drawn. Could it be because the DPSA is failing to give direction and guidance with regard to adoption and implementation of knowledge management? The results of such empirical research could provide detailed answers and lessons, which the DPSA could use to draft detailed and sound guidelines for the implementation of KM in the South African public sector organizations.

For the record, KM literature is replete with empirical studies which deal with the practice of knowledge management (Mphahlele, 2010; Munzhelele, 2012 and others), knowledge management frameworks, and universal knowledge management frameworks versus contingent theory/approach particularly for the private sector. These studies have demonstrated that the South African government have embraced KM, and there are a significant number of governments which have adopted and implemented knowledge management. However, there is lack/shortage of empirical studies on the high failure of knowledge management in the public

sector organizations. One of the aims of this study is to trigger debate and inspire KM scholars to conduct empirical research on the practice and high failure of KM in the South African public sector organizations.

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